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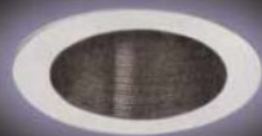
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Continuing-Education Opportunity is "Hearing Is

Believing: ArupAcoustics Has Put the Audio Back Into Acoustics" (page 149).

You can find these stories at www.architecturalrecord.com, including expanded coverage of Projects, Building Types Studies, and Web-only special features, such as our special section this month on China.



欢迎来到中国!

Huang Yin Dao Zhong Guo!

Editorial

By Robert Ivy, FAIA

Welcome to China! And to a new world for ARCHITECTURAL RECORD. Throughout its 113-year history, this magazine has featured work by American architects, and with increasing frequency, informative, inspirational, or provocative work by architects from around the world. With this issue, we literally take a great leap forward, not only embracing an entire nation's work thematically, but also fundamentally altering and enlarging our own brief—as a publication and as an institution.

You should be able to tell the difference, power-packed and compressed as this issue needs to be. Here you will find our overview of architects and architecture in China, a dizzying attempt for so large a topic. Included is a rich spread of information: outlines of numerous new projects in planning that are transforming eastern Asia; profiles of talented younger designers, many of whom had been trained abroad and have returned to home and family with hip new sensibilities intact; and evidence of what it means for non-Chinese architects who seek work in the China market, and the price it demands.

In addition to magazine publishing, McGraw-Hill Construction has embarked on a mission to China as earnest as any diplomatic one. After numerous Pacific crossings, collectively we are sponsoring a conference there. Unlike most unilateral gatherings, this colloquium will engage dual continents: Asia and North America. For two days this spring, April 15 and 16, we will host a Global Summit in Beijing, drawing two nations and their shared visions and aspirations together. From China will be leaders from national ministries, leading architectural and engineering practitioners, and investors—all gathered to discuss the implications of working where the stakes are so high. Complementing the Chinese will be leaders from North America who will share their own experiences facing the chasm between vision and reality: What obstacles lie in any professional firm's path to international success? There may be room for you at the table as well.

Some people complain that the architectural lingo seems too arcane or difficult. Uniquely, in a first effort, ARCHITECTURAL RECORD and our

sister publication, ENGINEERING NEWS-RECORD, will be translated into Mandarin Chinese for local audiences. Thanks to a friendly relationship with our partnering institution, Shanghai's Tongji University, both magazines suddenly broaden their reach: The Pacific will not seem quite so wide after April. Our new digital version of the magazine, made possible through Zinio technology, already lightens the airfreight bill. Virtual delivery weighs no more than bundles of light.

Too heavy on the China for you? If you are practicing in Illinois or Vermont, you may well ask, "What does all of this China-talk have to do with me?" What goes on there remains halfway around the globe, and how could it affect my own practice? China is, and always will be, Not in My Back Yard.

Yet are you aware that China's growth includes a dynamic component close to home? While we were compiling this issue, a delegation of Chinese builders visiting New York City stated that they were bidding on construction for improving a New York landmark—the Whitestone Bridge. Reciprocally, Perkins & Will, one of this country's leading architectural firms, already maintains two offices in mainland China. In other words, fellow architect, Wake Up! The international revolution has already taken place; but rather than political, it takes the form of economic, commercial, and professional interchange—a fluid melding of ideas and cultures that already affects us all.

Read, visit, attend. In this issue, what might seem radical change merely mirrors the facts.

Letters

Inspirational power

As I read the February 2004 Critique column ["Where does inspiration come from?" page 57], I kept waiting for you to disclose the source of Meier's "inspiration." Your conclusion that it was Hadrian's Villa may be stretching it a bit, inasmuch as you did not mention the designer of the Getty Center gardens, the artist Robert Irwin.

The photograph on page 57 shows the strength and power of Irwin's work as it plays with and against Meier's, without the influence of Hadrian. I strongly recommend you view the documentary video *Concert of Wills, Making the Getty Center*. Here you will see where Meier was headed and where and why the Irwin gardens ended up the way they did. —Charles Griggs, *Architect Sarasota, Fla.*

How did he do it?

Robert Campbell's essay on architects' inspirations and their relationships with those inspirations was an excellent and appreciated commentary [Critique, February 2004]. This subject is too often a delicate one with architects. Campbell's concluding tale of overpowering sun in Philip Johnson's Glass House made me smile. I was fortunate to have been with Johnson when he visited Taliesin during the late summer of 1999. We sat in Wright's great living room, marveling. Johnson asked rhetorically, more to himself than anyone else, "How does he do it? How does he do it?" Given my admiration and respect for both Mr. Wright and Mr. Johnson, I am grateful to have been able to share that moment. —Jeremiah Kimber
*Taliesin Senior Fellowship
Spring Green, Wis.*

Wait until it's right

I agree with your January editorial ["Hurry Up and Wait," page 15]. It is

certainly a common reaction that the WTC Memorial Competition finalist's designs are unmoving. No wonder, when the jury has focused on the abstract image to be presented to the world instead of the actual context that the design must fit in. There was almost no involvement with the fabric of the city, and certainly no responsiveness in the winning designs to the actual programmatic requirements of the competition. I fear that when built, the design will be severely compromised by all the other buildings and requirements not yet addressed.

A case in point is the final resting place of the unidentified remains—to me the most important and poignant item in the whole competition. None of the finalists seemed even to address the issue of the remains, which should have marked the site as a sacred place and become incorporated into its most enduring symbol.

Another problem is that none have come to terms with what Daniel Libeskind has proposed directly adjacent and overhanging the site—either the slurry wall, as Robert Ivy mentioned, or the cube in the northeast corner. An interpretive museum, as you suggest, is the obvious function for Libeskind's cube.

Congratulations on a well-thought-out editorial and worthwhile proposals. Waiting additional time to get it right is the right idea. —Bill Dede
Atlanta

Safety is not optional

Reginald Fuller's letter in the February issue [Letters, page 17] hit the proverbial nail on the head. Safety first.

Although it pains me to say it, it appears that some architects value aesthetics over fundamental safety requirements. As an architect whose practice specializes in building safety, I have investigated too many situa-

tions where the pursuit for some architectural aesthetic created unsafe conditions that resulted in personal injuries. These conditions include stairs without handrails, ungraspable handrails, unguarded open-sided floor areas, unmarked large glass panels, variations in stair-tread dimensions, floors that can become slippery under expected use conditions, or roofs that discharge storm water, snow, and ice to pedestrian areas below. The resulting injuries could be easily avoidable if the architect recognized that safety is a fundamental program requirement and is not an optional consideration.

The publication of projects that contain unsafe components without constructive criticism glamorizes the design and sends the wrong message to readers (including young architects). The recognition of being published may be construed as condoning an incomplete or unsafe design in the pursuit of some aesthetic ideal. The publication of these projects also marginalizes the work of the many architects whose designs comply with the adopted codes and recognized safety standards. Architects need to be aware that safety is fundamental to all designs. —Julius Pereira III, *AIA Chadds Ford, Pa.*

Grid and bear it

As a former Inside Dopester camping out in California, I fully endorse Robert Campbell's notion that the street grid in New York City [Critique, December 2003, page 49] represents the city's essence, its genetic code, giving it the conflicting virtues of mystery and clarity—through its human-scaled blocks of pizza parlors, apartments, markets, offices, shops—ever changing yet always recognizable as New York City.

It is therefore a great pity that none of the proposals for the new World Trade Center sought to return the lost grid to the megablock origi-

nally created to accommodate the towers. At that time, superblocks were all the rage as symbols of efficiency, industry, and urban renewal. The city grid that Campbell so enthusiastically celebrates was easily obliterated in favor of blank windswept plazas and massive identical high-rises—a scheme we now acknowledge as antithetical to the soul of the city.

The Libeskind proposal of staggered megaliths, for all the fanfare, is merely a more stylish version of the old—as static, inhuman, and heartless. How terrible for us to have squandered this unexpected opportunity when we could have followed the more difficult but ultimately more rewarding path where the variables are complexity, chance, and time.

We could have reinstated the Lower Manhattan grid into the megablock, thus allowing for infinite change within its permanence—change that would have resulted in unique combinations of densities and uses. This is the possibility that the grid so generously offers. —Tara D. Lamont, *AIA Sausalito, Calif.*

Corrections

February's Building Science article [page 129] should have quoted George C. Skarmas, AIA, director of historic preservation at Hillier in Philadelphia, when speaking about the New Orleans Charter for Joint Preservation of Historic Structures and Artifacts. Rem Koolhaas received the 2004 RIBA gold medal in February [News, January 2004, page 28]. In January's article on the Fifth Avenue Loft, the credit for the top photo on page 168 should have gone to Lara Thrasher of Murphy Burnham & Buttrick.

Write to rivy@mcgraw-hill.com.

REBUILDING LOWER MANHATTAN

Design for World Trade Center transit hub unveiled

Using models, slides, videos, and even felt-tip markers for sketching, architect Santiago Calatrava unveiled his soaring plans for the World Trade Center transportation hub, which will convey Lower Manhattan residents and workers to and from the area via PATH, N.Y.C. subway, and airport rail.

Calatrava's \$2 billion project will sit on the eastern edge of the trade center site within its own plaza, aligned with Daniel Libeskind's proposed "Wedge of Light" (an open space designed so that beams of light will hit the new trade center at key times each September 11).

At street level, an ovalar, wing-shaped glass and steel structure will welcome visitors. Held in place with ridged steel arches and compression rings, the 350-foot-long station will jut 168 feet into the air.

Underground, the station will feature roughly 200,000 square feet of retail, open space, and train platforms. Visitors will first encounter a balconied upper concourse level with shops and amenities. Twenty feet below, the 410-by-204-foot main concourse extends, free of columns (thanks in part to a roof made of arched concrete ribs), offering retail and pedestrian access to subway



The hub's exterior (left); lower concourse (above right); upper concourse (below right). Calatrava describes his plan (center).

lines and neighboring buildings. Beneath this level, travelers will reach the mezzanine, meant primarily for ticketing facilities, with PATH train platforms on the level below.

The station's white concrete interior will be suffused with daylight, thanks to the large glass entrance, glass block floors, and skylights situated throughout. Meanwhile, a hydraulic system allows the entrance structure to open in warm weather. The movement also has symbolic

meaning, Calatrava said, enabling the building to spread like outstretched arms, or the wings of a bird—a phoenix rising from the ashes.

"It will be a brilliant light in the midst of the city," the architect said, stressing the building's importance in attracting visitors downtown. Calatrava has previously designed transit stations in Lisbon, Zurich, Switzerland, and Valencia, Spain.

The design for the Port Authority of N.Y. and N.J.'s new station essen-

tially completes the initial planning process for the World Trade Center site. Only the preliminary designs for the area's cultural facilities remain.

The station is a joint effort between Calatrava with DMJM + Harris and STV Group. It will serve about a quarter of a million people a day, said Port Authority vice chairman Charles A. Gargano. The hub is expected to begin passenger service in late 2006 and be completed in 2009. *Sam Lubell*

WTC Briefs

Plan for WTC cultural complex released

The LMDC shared a report detailing its vision for a World Trade Center cultural district. Plans include a 50–70,000-square-foot memorial center, with artifacts from the 9/11 attacks; a 100–200,000-square-foot performing arts center to the east of the WTC site; and 200–250,000 square feet of cultural buildings

located adjacent to the old WTC's north and south tower footprints.

Among the more than 15 institutions short-listed for space at the complex are New York City Opera, the Joyce Theater Foundation, the New York Hall of Science, and the New-York Historical Society. *S.L.*

Insurance trial continues

The World Trade Center insurance trial began on February 9 in New York City, pitting developer Larry

Silverstein against 13 insurance companies. Silverstein, who held a lease on the Twin Towers, claims entitlement to more than \$7 billion in insurance payments, declaring that each plane that struck the towers constituted a separate attack. The companies, led by Zurich-based Swiss Re, argue he is only entitled to around \$3.5 billion. *S.L.*

JFK link options announced

The LMDC announced four alterna-

tives for improved rail access from Lower Manhattan to Long Island and JFK International Airport. Plans include a new tunnel in Lower Manhattan, the existing Montague Tunnel (just north of the new tunnel, it now serves the N and R subway lines), the existing Cranberry Tunnel (just north of the Montague, it now serves the A and C subway lines), or a combination of the Montague and Cranberry Tunnels. *S.L.*



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Record News

REBUILDING LOWER MANHATTAN

An Interview with WTC Memorial designer Michael Arad

Architect Michael Arad was selected in January to design the World Trade Center Memorial. Arad, who lives in New York, has worked for the New York City Housing Authority and for New York-based Kohn Pedersen Fox (KPF). He is working on the memorial project with a team that consists mostly of designers from KPF.

ARCHITECTURAL RECORD: Can you describe your reaction when your design was chosen for the memorial?

MICHAEL ARAD: It didn't feel quite real. It took me a few hours to understand it, and I still have that "reality check" experience every once in a while. It's astounding to find myself in this position, and it's very daunting. Really, all I can do is not focus on that aspect, but focus on what I would like to accomplish.

AR: Can you describe the design process for Reflecting Absence?

MA: I started thinking about the idea a few months after September 11. I envisioned a memorial that would be on the Hudson River, close to the site. You would walk up to the river's edge and you'd see these two voids which would be sort of inexplicable—how do you have voids in the river?

Then I became very curious about how it could work, and I tested it time and time again. I went to the model shop that I used to go to when I worked at KPF. I spent a few days there with [model builders] Edison Morales and Jamil Awad, and we built this functioning model together. I bought one of those little desktop fountains from Bed Bath & Beyond and broke it open and tore the pump out. It was a fairly complicated little fountain and it worked, which amazed me, because I drew it and drew it, but when you actually poured water into it and plugged it in and it started flowing, it was an amazing moment to see it. So I thought this would be my idea. At that point I put it aside for a few months and focused on going back to work.

Then came the competition. I thought, how would I take this idea that I've been working on for a long time and apply it to the site? I had the idea of creating these two voids, with water flowing away from you and into this void that never

fills. The space needed to be a procession: You're moving from space to space focusing on each area. The space also needed to be intimate enough for each person to have their own experience, an understanding of that day.
AR: What does the design symbolize to you?
MA: I don't want to be too literal about the interpretation of the design. I think it should be something that is open to different readings, so different people can bring their own understand-



Arad was unknown before winning the memorial competition.

ing to the memorial. But one idea that was important to me was reflecting the continued absence in our lives brought upon by these deaths. So the void remains empty though water flows into it.

AR: Can you describe your working relationship with [master planner] Daniel Libeskind?

MA: Daniel's been really supportive, and he's been very generous in his praise. I'm very grateful. He understands that there's a basic premise to this site very much in sync with his idea. While he envisioned a single, large void, this is about the creation of two. If he was upset [with my design], I'm not aware of that. S.L.

For more of the interview, including Arad's thoughts on listing victims' names and presenting disaster artifacts, visit our Web site.

For continuous updates on the planning of Lower Manhattan, visit our special section at www.architecturalrecord.com.

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Record News

AIA announces Honor Awards

In January, the American Institute of Architects announced the recipients of its 2004 Honor Awards, the profession's highest recognition of excellence in architecture, interiors, and urban design. Selected from nearly 600 submissions, 30 recipients will be honored in June at the AIA 2004 National Convention in Chicago.

Honor Awards in Architecture

Bayer, Leverkusen, Germany, by Murphy/Jahn;
The Brain, Seattle, by Olson Sundberg Kundig Allen Architects;

Center of Gravity Foundation Hall, Jemez Springs, N.Mex., by Predock Frane Architects;

Chicken Point Cabin, Hayden Lake, Idaho, by Olson Sundberg Kundig Allen Architects;

Deutsche Post, Bonn, Germany, by Murphy/Jahn;

DoMa Gallery, Baltimore County, Md., by W Architecture and Landscape Architecture;

Los Angeles Design Center & Cisco Brothers Showroom, Los Angeles, by John Friedman Alice Kimm Architects;

Northeastern University West Campus Residence Halls, Boston, by William Rawn Associates, Architects;

Telenor Headquarters, Oslo, Norway, by NBBJ/HUS/PKA;

The Point House, Montana, by Bohlin Cywinski Jackson;

The Seaside Interfaith Chapel, Seaside, Fla., by Merrill and Pastor Architects;

State Street Village, Illinois Institute of Technology, Chicago, by Murphy/Jahn;

Skybridge at One North Halsted, Chicago, by Perkins & Will;

Salt Lake City Public Library, Salt Lake City, by Moshe Safdie and Associates in association with VCBO Architecture;

Taghkanic House, Hudson, N.Y., by Thomas Phifer and Partners.

Honor Awards in Interiors

American Meteorological Society-Editorial Offices, Boston, by Anmahian Winton Architects;

Co-Op Editorial, Santa Monica, Calif., by Pugh + Scarpa;

Academic Center for Student Athletes at



Honor Awards winners include the Taghkanic House (top); Salt Lake City Public Library (above); and Deutsche Post (left).



Louisiana State University, Baton Rouge, La., by Trahan Architects;

Carol & Carl Montante Cultural Center, Buffalo, by Cannon Design;

NAI Exhibition Silent Collisions: Morphosis Retrospective, Santa Monica, Calif., by Morphosis;

N.Y.C. Public School 42 Queens Library, Queens, N.Y., by Weiss/Manfredi Architects;

Pallotta TeamWorks New Headquarters, Los Angeles, by Clive Wilkinson Architects;

First Presbyterian Church of Encino, Encino, Calif., by Abramson Teiger Architects.

Honor Awards in Urban Design

Chicago Central Area Plan, Chicago, by Skidmore, Owings & Merrill;

Preventing Sprawl in Coyote Valley, San Jose, Calif., by WRT/Solomon E.T.C.;

Mission Bay Redevelopment Plan, San Francisco, by Johnson Fain

The Confluence: A Conservation, Heritage & Recreation Corridor, St. Louis, by The HOK Planning Group and H3 Studio;

UrbanRiver Visions, Mass., by Goody, Clancy & Associates.
S.L.

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Record News



Transforming Philadelphia's parkway with architecture

Philadelphia's Benjamin Franklin Parkway is preparing to become, by decade's end, a major mecca for arts and culture. Despite being home to the Philadelphia Museum of Art (PMA), the Rodin Museum, The Franklin Institute, and the Central Branch of the Free Library of Philadelphia, the 1-mile, axial-oriented parkway, projecting from Center City to the city's northwestern neighborhoods, has long been considered poorly used and underimagined. For many locals, the boulevard is a nicely landscaped highway overwhelmed by traffic.

But the city, some powerful foundations, cultural institutions, and community development organizations are seeking to change this via new signature projects: Richard Gluckman's \$80 million renovation and expansion of PMA's Perelman Building, Moshe Safdie's \$110 million Central Branch Library addition and renovation, Tadao Ando's new \$45 million Calder Museum, and the Olin Partnership's new streetscape and traffic pattern plan, which includes Philadelphia-based Cope Linder's new \$5 million lighting scheme.

Added to these initiatives is the possible relocation to the parkway, pending court approval, of the famed but financially troubled Barnes Foundation and its multibillion-dollar art collection. The museum currently operates in the Philadelphia suburb of Merion. The move is spearheaded by \$150 million from Philadelphia's Pew Charitable Trusts, the Lenfest Foundation, and the Annenberg Foundation for an endowment and a new building, which rumors suggest Renzo Piano may design.

Suddenly, the idea of an arts mecca seems well-grounded. But this is not a simple "if you build it, they will come" redevelopment project. To bolster tourism and strengthen an already impor-

tant economic engine through architecture, the city must first resolve several design issues.

Maxine Griffith, executive director of the Philadelphia City Planning Commission, says, "What needs to happen is to knit the environment together by creating new opportunities for generating life without losing the [majestic] ambience of the place." These new opportunities involve, among other ideas, developing small community parks to increase pedestrian traffic, and conducting parking, vehicular traffic, and public transit studies to improve access to—and visitor friendliness of—the parkway. What's also needed, says Meryl Levitz, president and C.E.O. of the Greater Philadelphia Tourism Marketing Corporation, is a broader vision to unify the parkway institutions with the surrounding neighborhoods and to bring nighttime activities to the parkway. "We've found out that just because [visitors] go to the Franklin Institute doesn't mean they're going to walk down the parkway to the Art Museum."

Pending such improvements, the parkway could become an urban gold mine. According to a 1998 report by the Pennsylvania Economy League-Eastern Division, the arts in Philadelphia generate \$564 million in annual spending, 76 percent of which comes from those living in the region. A revitalized parkway could both draw more visitors from outside the region and better encourage them to spend. "Every dollar invested in the arts," the report also reads, "supports \$2 in total regional spending; every \$25,000 in spending supports one job." Translated, the city could reap an additional \$480 million in spending, for an annual total, based on 1998's figure, of \$1.044 billion, with support for 41,760 jobs. *Joseph Dennis Kelly II*



Safdie's Central Branch Library addition (top) and Gluckman Mayner's PMA addition (middle) will be added to the parkway (above). Will the Barnes be next?

IMAGES: COURTESY MOSHE SAFDIE AND ASSOCIATES (TOP); GLUCKMAN MAYNER ARCHITECTS (MIDDLE); © BOB KRIST (BOTTOM)

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Amid protest, Cloepfil unveils new design for 2 Columbus Circle

While preservationists filed lawsuits to try to block the sale of Edward Durrell Stone's 2 Columbus Circle in Manhattan, Oregon-based Allied Works Architecture, chosen in 2003 to convert the building for the Museum of Arts and Design, unveiled an updated scheme in January.

Allied Works principal Brad Cloepfil, AIA, describes the updated design as a "continuation and refinement" of the firm's competition-winning proposal. Maintaining the terra-cotta recladding of the firm's original design, the scheme introduces a 30-inch-wide glass strip that travels across the building's concave Central Park facade and angles into the interior surfaces. This strip, says Cloepfil, "incises the opaque body of the building, bringing in natural light, spectacular orientations to Central Park, and spatial continuity," through new circulation spaces. The structure's notable "lollipop" columns would remain behind 13-foot ground-floor glazing, while a basement auditorium would be restored.

Meanwhile, at press time, February 27 was



2 Columbus Circle's future?

set for the start of oral arguments in a lawsuit filed by local preservation groups, including the Historic Districts Council, LandmarkWest, and DOCOMOMO, to block the planned May 2004 sale of the building to the Museum of Arts and Design. The suit challenges the property's transfer from the City of New York to the Economic Development Council (EDC), through which the city brokers deals involving public land.

Noting that the New York City Landmarks Preservation Commission has not held public hearings on the historical significance of the structure, the lawsuit asserts that "the city's economic objectives infected the process for considering the potential landmark status of the building and subsequently tainted the environmental analysis that it performed in order to gain legal authorization for the sale." The final sale depends on approval by the Manhattan Borough Board, which meets in March, and the EDC board, scheduled to vote on the matter in May. A ruling on the suit is expected by that time. *Thomas de Monchaux*

D.C. unveils plans to develop Anacostia waterfront

The Anacostia has been called the forgotten river of Washington, D.C. A polluted tributary of the Potomac, it flows south and east of official Washington, skirting many neglected neighborhoods. The recently released Anacostia Waterfront Initiative Framework Plan—four years in the making—will attempt to shift the city's development eastward and physically tie the river to the rest of the city. The plan will guide river cleanup, renewal and redevelopment of waterfront neighborhoods, and the building of four new neighborhoods. Developed by the D.C. Office of Planning, the initiative has attracted more than \$1 billion in private and public funds. Over a 20-year build-out period, private investment is expected to exceed \$4 billion.

The plan targets 900 acres, 90 percent of them publicly owned, along the 8-mile-long riverfront. By 2011, planners expect to add about 20,000 units of housing and nearly 5 million square feet of office and retail space in new and existing waterfront neighborhoods. The plan identifies 25 new sites for museums and memorials and would link 1,800 acres of open space via parks, trails, and bikeways.

To help map an implementation strategy, the Urban Land Institute and the planning office held a three-day symposium in January. Symposium architects, developers, and officials agreed that cleaning the river and creating connections to it—with activity-oriented parks, trails, and bikeways—should come first. Richard Rogers, the symposium cochair, urged dense, compact urban centers around existing transit hubs and the use of existing neighborhoods as building blocks. "First do no harm," he urged. "Give each zone its own identity; think in terms of neighborhoods, not projects." *Andrea Oppenheimer Dean*



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Record News

U.K.'s "Healthy Hospitals" envisions better health-care design

Nurses, officials, and designers have recently launched a campaign to spur improvements in the design of all hospital buildings in Britain. The Commission for Architecture and the Built Environment (CABE) and the Royal College of Nursing (RCN) published their findings in a report called *Healthy Hospitals*, which points out the tendency of most hospitals toward design mediocrity, and outlines a new agenda for successful hospital design as a health-care priority.

Research among 500 nurses and directors of nursing demonstrates overwhelmingly—and not surprisingly—that a well-designed hospital environment has a positive effect on patient recovery and staff morale. A poorly designed environment, meanwhile, contributes significantly to stress levels.

CABE/RCN's chief demands include uncluttered foyers; spacious interiors with direct and ambient daylight; good integration of architecture, landscape design, and art; versatility in daily use; easily navigated layouts; clear signage; and rooms allowing for patient/staff personalization and privacy. Measures to reduce stress via enhanced color and lighting with the use of dichroic glass are also high on the agenda.

The campaign is backed up by proposals from four British architectural practices: McDowell + Benedetti envisions the entrance of its proposed hospital as a more welcoming environment, transforming it into a town-square style. Muf art/architecture with Rosetta Life proposes more green spaces, some of which feature art galleries. Architects Jane Darbyshire and David Kendall propose a more intimate feel to bedrooms, making them elegant, one-person spaces. Fat Architecture envisions a colorful exterior composed of rows of red crosses.

CABE invited the public to vote on the hospital design they would prefer, with 53 percent of the votes going to Jane Darbyshire and David Kendall. The feedback will be presented to key decision makers in 2004 as part of CABE's recommendations for improvements.

The campaign comes as the British gov-



Visionary hospital designs (top to bottom): Fat Architecture's new facade; McDowell + Benedetti's town-square plan; Jane Darbyshire and David Kendall's elegant interiors; and muf art/architecture and Rosetta Life's open spaces.



ernment has embarked on the largest health-care building program for a generation, aiming to build more than 100 new hospitals by 2010 at a cost of \$21.3 billion. Twenty-three are already being built across England at a cost of \$3 billion, with about 15 more to be announced imminently. Most of these are to be realized via the Private Finance Initiative, with private companies responsible for their construction and maintenance until ownership passes to the National Health Service at the end of the contract period, usually between 25 and 30 years. *Lucy Bullivant*

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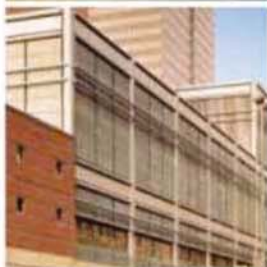
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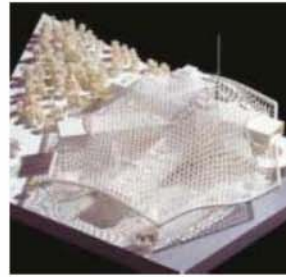
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Record News On the Boards

New Centre Pompidou being designed for Metz, France

Tokyo-based Shigeru Ban Architects, in association with Jean de Gastines of Paris and Gumuchdjian Architects of London, has won the design competition to build the new Euro Pompidou Centre in the city of Metz, 3½ hours east of Paris. Commemorating the 30th anniversary of the opening of the Pompidou Centre in Paris, the new facility is scheduled to open in 2007.

A large pavilion set within a new park, the museum will consist of both permanent and temporary exhibition space. Three climate-controlled steel-truss tubes, measuring 328 by 49 feet apiece, will house the permanent collection and



Ban's Pompidou: tube-heavy.

frame views of the city's train station and cathedral.

Beneath the tubes will be the forum for temporary exhibitions. A vast indoor/outdoor space, the forum will be encased with movable glass shutters, while mammoth curtains will cut the light as needed. Inspired by a woven bamboo Chinese hat, a giant, hexagonal umbrella made of woven steel and

plywood protected by a translucent membrane on top will cover the entire complex.

"In the summer we take off clothes. In the winter we wear more," says Ban. "I want to design a space that can be changed depending on the climate or occasion." *Naomi Pollock*

In D.C.: Swiss ambassador's residence

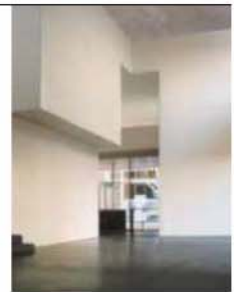
A conceptual design by Steven Holl, FAIA, and Justin Russli of Lucerne, Switzerland, has been selected in a competition for the Swiss ambassador's residence in Washington, D.C.

The parklike site inspired Holl's plan for the 14,000-square-foot, two-story building, in which a hilltop piazza in front of the north-facing front entrance will become the foreground for a direct view to the Washington Monument. The space, Holl says, will create a "kind of urban precinct."

The building's cladding of board-formed, slate-gray concrete, its structural glass plank with

white insulation, and its slate trim are all inspired by Holl's memory of Switzerland from several visits. He envisions gray and white snow and ice against charcoal-colored rock.

Furthermore, the building's understated image, Holl says, with its grass-covered roof and copious wall insulation, will be about energy conservation, rather than consumption. *Andrea Oppenheimer Dean*



Rogers' bridge in Glasgow will be a destination in itself

Richard Rogers Partnership has won an architecture competition to design a new pedestrian bridge across the River Clyde in Glasgow, Scotland. The winning scheme, called "Neptune's Way," will connect Tradeston, a redevelopment area, with the financial district of Broomielaw. The \$69 million undertaking is scheduled to begin

construction in August 2005.

"Neptune's Way is clearly a piece of 21st-century architecture," says Charlie Gordon, competition chairman. "The new bridge will be a destination in its own right rather than simply the quickest way to cross the river."

Plans call for a cable-stayed compression-arch bridge that sweeps across the river in an elliptical crescent. The continuous curve and gradual ramp of the structure allow common access for all users, while the deck alignment creates a variety of views. Additionally, there will be two new landscaped parks at either end of the bridge with public pontoons for river taxis at the North bank and a new nightclub at the South bank. The project is slated for completion in 2007. *Tony Illia*

IMAGES: © RICHARD DAVIS (TOP); COURTESY STEVEN HOLL ARCHITECTS (MIDDLE); RICHARD ROGERS PARTNERSHIP (BOTTOM)

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Record News

McGraw-Hill Construction Dodge Index

Construction levels remained stable in 2003

The McGraw-Hill Construction/Dodge Index reveals an overall healthy level of construction activity in 2003.

Overall construction increased by 3 percent, bringing total construction starts to \$518.6 billion in the U.S. As in recent years, levels were particularly bolstered by a robust volume of single-family housing, which showed a 12 percent gain.

For other building types, last year's performance was more varied. School construction continued to move at a brisk pace, but the tough fiscal climate for state and local governments had a dampening effect on health-care facilities, museums, churches, and convention centers. Commercial building in 2003 posted its third consecutive decline, due to a further loss of momentum for offices

and warehouses. At the same time, the commercial decline was cushioned by gains for hotels and stores, with the latter aided by the trend toward open-air shopping centers. And apartment construction was able to see moderate growth in 2003, supported by continued efforts at downtown revitalization.

Predictions for 2004

For 2004, the strengthening economy will contribute to further growth for stores and hotels, plus the start of a turnaround for the office market. While the fiscal stress for the states is now beginning to ease, it's likely to be another year before the institutional building types are able to see renewed expansion.

Robert Murray, chief economist, McGraw-Hill Construction

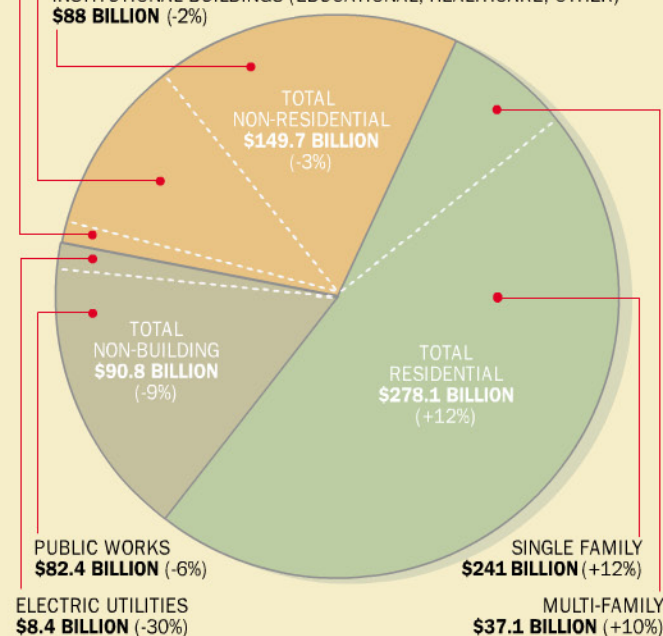
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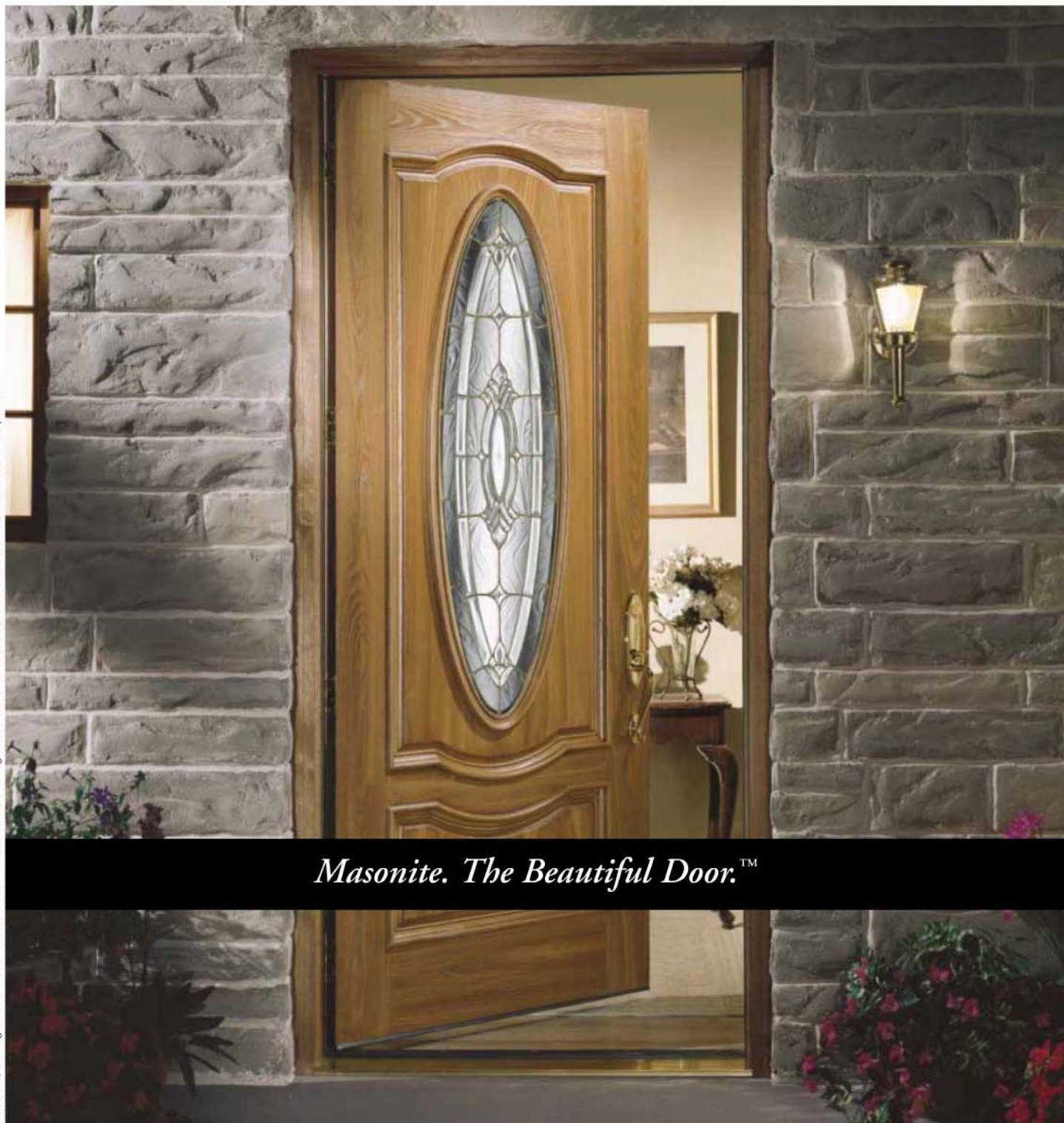
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News Briefs



Gehry's new facade for the Ontario art museum.

Gehry unveils design for Art Gallery of Ontario

Frank Gehry, FAIA's design of a \$148 million, spatially redeveloped Art Gallery of Ontario (AGO) was unveiled in his home town of Toronto on January 28.

The revamped AGO has been designed "from the inside out to simplify the interior" and make it less confusing to visitors, Gehry said at the event.

The entrance will be shifted to the center, aligned with the gallery's classical 1901-era central court, topped by a glass roof and dominated by a spiral staircase leading to galleries on new third and fourth floors. Other changes include a new 70-foot-high, 600-foot-long titanium and glass canopy and interior promenade extending along the entire block of the main facade, exposing a sculpture gallery. A new four-story, titanium and glass wing, whose final design is still unsettled, will house a center for contemporary art.

When the transformation is completed, likely in 2007, the AGO will have added 97,000 square feet of new space and renovated 190,000 net square feet, increasing its overall size by 20 percent. *Albert Warson*

New York's Time Warner Center opens

The Time Warner Center, one of the largest developments in New York City history, opened with a black tie gala celebration on February 4.



The Time Warner Center.

Located on the west side of Columbus Circle and designed by David Childs, FAIA, of Skidmore, Owings & Merrill, the 54-story, 2.8-million-square foot building will instantly transform its neighbor-

hood. Inside are shops comprising the 347,000 square feet of "Shops at Columbus Circle"; offices, including Time Warner's headquarters and CNN's broadcast facilities; ultra-luxury apartments (the most expensive apartments at One Central Park Condominiums reach into the \$50 million range); The Mandarin Oriental, a boutique hotel with 251 guest rooms; and the yet-to-open Jazz at Lincoln Center, the first major venue created specifically for jazz, with three theaters totaling 1,970 seats.

The building, which includes two dark glass towers rising from a central concourse, is trapezoid-shaped to fit within the unusual street grid and to maximize views of Central Park. *S.L.*

Eugene Hopkins named AIA president

Eugene C. Hopkins, FAIA, senior vice president of the national firm SmithGroup, was inaugurated as the 80th president of the American Institute of Architects (AIA) during ceremonies held at the Library of

Congress in Washington, D.C.

Hopkins succeeds North Carolina architect Thompson E. Penney, FAIA, and will represent the nearly 72,000 members of the AIA in the coming year. *S.L.*

Joseph Fujikawa dies

Chicago architect Joseph Y. Fujikawa, founding principal of Fujikawa Johnson and Associates, died earlier this month at 81.

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GO BACK IN TIME.

Dates & Events

the history of Maine architecture, this exhibition encompasses drawings made between 1800 and 1870. At the Portland Museum of Art. For more information, call 207/775-6148 or visit www.portlandmuseumofart.org.

**Affordable Housing: Designing an American Asset
Washington, D.C.**

February 28–August 8, 2004

This exhibition demonstrates that low-cost housing need not be of low quality and explores the potentially far-reaching benefits of good design for residents and their broader communities. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Lectures, Conferences,
Symposia**

**2004 National Green Building Conference
Austin, Tex.**

March 14–16, 2004

The National Association of Home Builders is holding their conference “Bringing Home the Green” in the birthplace of the green building movement to examine and present why a growing number of home builders are “going green.” At the Austin Hilton Hotel and Convention Center. Call 800/368-5242 or visit www.nahb.org/greenbuilding.

**Envisioning Architecture
Washington, D.C.**

March 22, 2004

Symposium in conjunction with the Museum of Modern Art exhibition of its collection of nearly 1,000 architectural drawings by the most eminent architects of the 20th century. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Learning from World Heritage: Lessons from International Preservation & Stewardship of Cultural & Ecological Landscapes of Global Significance
Natchitoches, La.**

March 25–27, 2004

This symposium will be an opportunity to learn about the most up-to-date thinking on the identification, management, and protection of cultural and ecological landscapes. Visit www.icomos.org/usicomos.

Enclave**New Haven, Conn.**

March 26–27, 2004

A symposium examining a unique and critically important site of every major city, its ports. An international roster of scholars, artists, and writers will discuss how ports and airports, essential hubs of commerce, are being reshaped by the global economy. At the Yale School of Architecture. Call 203/432-2288 or visit www.architecture.yale.edu.

**Seven Houses One Neighborhood
Houston**

March 27–28, 2004

The Rice Design Alliance will hold its 27th annual architecture tour, highlighting a distinctive Houston neighborhood: the David Crockett Addition. Call 713/348-5924 or visit www.rda.org.

**Daniel Solomon: Cloth from Threads
New Haven**

March 29, 2004

Projects of Solomon's firm include the Fine Arts Building in Berkeley and the Beth Israel Memorial Chapel and Cemetery in Houston. Solomon, a professor of architecture at the University of California, Berkeley, will present this lecture at the Yale School of Architecture. Call 203/432-2288 or visit www.architecture.yale.edu.

**Homeownership: The American Dream
Washington, D.C.**

March 30, 2004

Nicolas Retsinas, director of Harvard's Joint Center for Housing Studies, will deliver a keynote address for the National Building Museum's symposium on affordable housing, outlining the economic, policy, and practical issues related to homeownership today. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Affordable Housing: Good Design Makes
Good Living
Washington, D.C.**

March 31, 2004

Four sessions will focus on grassroots design, the government as a design partner, technology as a catalyst for good design, and the social and economic benefits to be gained by a successful marriage between good design and affordable housing. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Frank Gehry: Current Work
New Haven**

April 1, 2004

The Pritzker Prize winner's most recent masterworks are the Walt Disney Concert Hall in Los Angeles and the Richard B. Fisher Center for the Performing Arts at Bard College, New York. Gehry is the Louis I. Kahn Visiting Professor of Architectural Design at the Yale School of Architecture. At the Art and Architecture Building. Call 203/432-2288 or visit www.architecture.yale.edu.

**2004 Kitchen and Bath Industry Show
and Conference
Chicago**

April 1–4, 2004

This is the largest annual event of its kind, offering the latest in cutting-edge design, creative application of product lines, and new products. At Chicago's McCormick Place. Call 800/933-8735 or visit www.kbis.com for further information.

**Zaha Hadid: Current Work
New Haven**

April 5, 2004

The London-based architect is the Eero Saarinen Visiting Professor of Architectural Design at Yale. At the Art and Architecture Building. Call 203/432-2288 or visit www.architecture.yale.edu.

**The Philadelphia Furniture and
Furnishings Show
Philadelphia**

April 16–18, 2004

This show offers the finest in handmade objects for the home and office, presenting a gathering of the work of decorative artists from all over the world. Call 215/440-0718 or visit www.pffshow.com.

Competitions

City Lights Design Competition

Deadline: March 12, 2004

An international design competition for a new streetlight for the City of New York. The winning design and its variations will be used to light streets, sidewalks, and parks within the city's five boroughs. For more information, visit www.nyc.gov/buildnyc/citylights.

**Broadway Square Design Competition
Fargo, North Dakota**

Deadline: March 15, 2004

Competition for a design for Broadway Square that will enhance the space and be compatible with the Broadway streetscape and surrounding features. Call 701/241-1474 or visit www.cityoffargo.com/

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Dates & Events

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2004 AIA St. Louis Photography Competition

Deadline: March 15, 2004

Open to architects registered in the U.S., associate members of AIA, and student members of AIAS. Call 314-621-3484 or visit www.aia-stlouis.org.

2004 Business Week/Architectural Record Awards Program

Deadline to order submission package:

March 19, 2004

Deadline: April 16, 2004

These awards honor architectural solutions that help clients achieve business goals through measurable results and distinguished collaboration between architect and client. For more information, call 202/626-7524 or e-mail bwarawards@aia.org.

The Frederick P. Rose Architectural Fellowship

Deadline: March 29, 2004

The Fellowship funds visionary partnerships between nonprofit organizations and new architects with the goal of making improvements in struggling communities nationwide. Visit www.enterprisefoundation.org/RoseFellowship/.

Inside the Not So Big House Call for Submissions

Deadline: April 2, 2004

Susanka Studios is seeking submissions of architecturally designed houses to be featured in an upcoming book entitled *Inside the Not So Big House*. Visit www.notsobighouse.com.

International Ideas Competition 2004: Shrinking Cities—Reinventing the City Berlin

Deadline: April 15, 2004

The objective is to identify innovative approaches capable of qualifying the urban transformations associated with the phenomenon of shrinkage and to develop new ideas about the city based on the specific qualities of shrinkage itself. Visit www.shrinkingcities.com.

E-mail events and competitions information two months ahead of event or submission deadline to ingrid_whitehead@mcgraw-hill.com.

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March 22 Envisioning Architecture

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March 30–31 Symposium Affordable Housing: Good Design Makes Good Living

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archrecord2 FOR THE EMERGING ARCHITECT

DEPARTMENTS

This month ar2 speaks to **Design** architect Li Hu. Born and raised in China, Li Hu currently lives and works in the U.S. His work with Steven Holl Architects and his own firm, **OPEN** architecture, have led him to projects in China. Below is just a small sampling of his output. Please go to architecturalrecord.com/archrecord2/ for much more on this young architect.

DESIGN

One architect, many facets

Li Hu insists that he finds time to relax on Sundays, but upon hearing of everything he is involved in, you might wonder how true that statement is. He began his studies at Tsinghua University in Beijing and completed his M.Arch. at Rice University in Houston in 1998. After time spent in Princeton, N.J., he began work with Steven Holl Architects, where he is a project architect today. During his time there, Li Hu has not only co-launched an architectural journal, but he has also started an architectural firm.

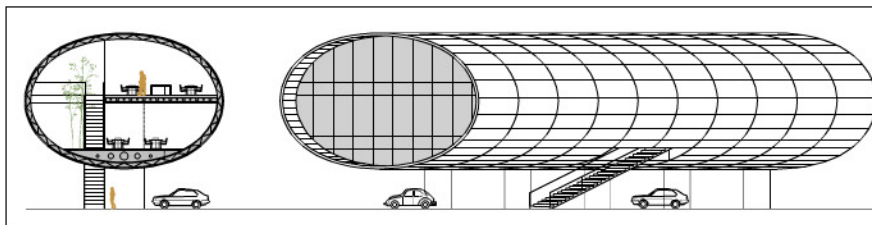
At Steven Holl Architects, Li Hu has been involved in several high-profile projects and competitions. Many projects have been U.S.-based, but recently

several have him working in his homeland of China, currently on projects in Nanjing and Beijing. "Our Nanjing projects are Holl's first in China," says Li Hu. "The Art and Architecture Museum in Nanjing will be the first contemporary museum built in China."

In a fateful meeting between Li Hu, architect Yungho Chang, and Steven Holl, the three realized a need for a new type of architectural publication. Made in New York,

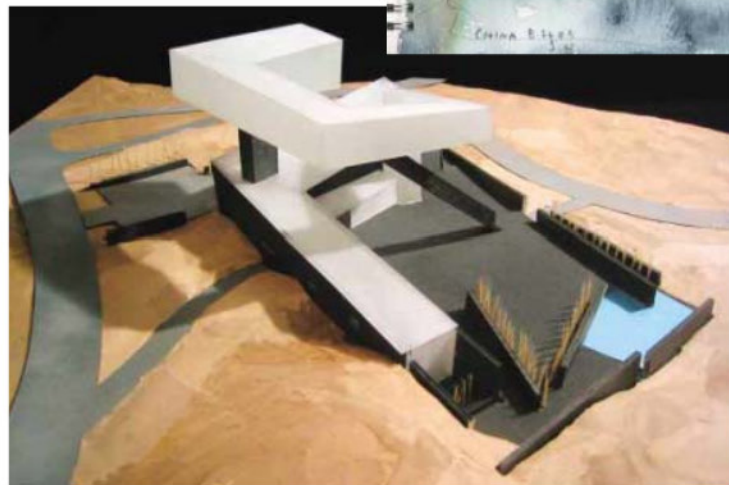
printed in Beijing, and encompassing issues worldwide, the bilingual publication *32:Beijing/New York* (above) does not attempt to answer questions. Instead, the journal acts as an open forum. "Each issue purposely does not have a theme," explains Li Hu. "Instead of compartmentalizing our ideas, our aim is to ask questions about urgent political and sociological issues concerning architecture, not answer them." The impressive roster of past contributing writers includes Kenneth Frampton, Lebbeus Woods, and Michael Bell. With the fourth issue coming out soon, Li Hu notes, "Our circle of contributors is expanding as is our circulation."

Along with his wife, architect Wenjing Huang, Li Hu formed **OPEN** architecture studio in 2002. "OPEN's manifesto is to make architecture more accessible to more people," explains Li Hu. "We explore ways to build a platform for open collaboration among architects, end users, and developers." In 2003, **OPEN** won a competition for the Shenzhen Senior Activity Center in China. Li Hu is now conducting research on suburban homes and offices for an ecological project using a tubular design that he hopes to implement there. The architect explains that China is "rapidly importing ideas from America, and especially has a fascination with American suburban life." *Randi Greenberg*



Eco_Tube

OPEN architecture's research on flexible suburban office alternatives has led to this environmentally conscious plan. Floating adaptable sections can accommodate various functions of a work space.



Nanjing Art and Architecture Museum, Nanjing, China
Steven Holl Architects' winning design features a hovering

translucent form, a tea house, and a curator's residence. Due for completion in 2005.

IMAGES: COURTESY STEVEN HOLL ARCHITECTS (BOTTOM TWO), WATERCOLOR BY STEVEN HOLL; OPEN ARCHITECTURE (TOP)

Doing business in China: A primer for the daring, shrewd, and determined

Practice Matters

By Tom Larsen, AIA

If you're an architect bound for China, here's some advice from veterans: Be as good at negotiations as you are at winning competitions; *do not* underestimate the competitive drive and business savvy of owners, developers, government officials here; *do* believe people when they say that Chinese clients and design professionals are quickly becoming sophisticated; they are rapidly gaining technical knowledge, and they demand excellence. One more thing—think about packing an extra bag; those who venture out for the long haul stand to make the most of what it takes to get established here.

Make money and do design, too

The export-fueled growth of the Chinese economy has been in the double-digits for almost 20 years. While officials report the economy grew by only 9.1 percent in 2003, China "honestly may not know how fast it's growing," according to a story in the January 19, 2004, issue of *BusinessWeek*. It notes that Morgan Stanley estimates growth may really be more like 15 percent.

China's transformation into an industrial, high-tech, and services-oriented economy has produced a construction boom. That, in turn, has created the most active market for architectural design services outside the U.S. It's a business opportunity many firms can't afford to ignore.

Tom Larsen is a management consultant for architects, designers, and engineers. He can be reached at trlarsen@larsen-associates.com.

There's another equally important hook for American architects. They might get to design world-class buildings that they would never get to do in the U.S., and actually see them built. "The Chinese want international-quality design, and in fact, technologically, they want to surpass things we do in the U.S.," says Gene Schnair, AIA, partner in SOM's San Francisco office.

Structuring your business

There are three basic ways that firms can do business here. In the first, the U.S. firm contracts with a Chinese client but does not open an office here. The main drawback is that currency restrictions make it hard for Chinese clients to pay for services provided by foreign companies. To get around this, clients usually hire "tendering companies" to make offshore payments on their behalf. These companies must be authorized by the Chinese government. Architects need to understand currency restrictions and plan for added costs and bureaucratic delays.

Those who are ready to open offices here may do it in one of two ways. Opening a "representative office" (RO) allows a firm to have a base from which to do marketing for the main office back in the U.S., and to do things such as market research. But ROs can't engage in contracts for services in China. The second way is to set up as a "wholly foreign owned enterprise," or WFOE. These limited-liability companies can employ Chinese nationals and enter into contracts in local currency. Architecture and engineering offices set up under

the Ministry of Construction of the People's Republic of China's Regulations for Foreign-Invested Construction and Engineering Design Enterprises, Decree No. 114. (See www.cin.gov.cn/law/depart/2002110401e.htm.)

For all firms, even those without local offices, working in China is expensive. Professionals who have done a lot of work here say that almost all business is conducted in Chinese, even with Chinese who speak English. They note often younger, less experienced architects who speak Chinese have more influence with clients than experienced American partners. Firms active in China have invested significant sums to hire Mandarin-speaking employees, consultants, and legal counsel to translate codes, regulations, contracts, and negotiations. Travel and housing costs are also not cheap. "You can't imagine the huge human toll on senior management, just in terms of travel. You need really committed people," says Paul F. Jacobs III, AIA, chairman of RTKL, Baltimore.

Win Competitions ...

Designers need to be aware that, because the state owns the land, almost all work is awarded either by invited or open competitions—with a twist. In invited competitions, architects are asked to participate by a sponsor, the owner or developer commissioning the work, and given a program. Juries comprise members of different governmental agencies, an independent panel of experts, and usually, but not always, the client.

Competitions don't always pro-

duce optimal results for the sponsor or designer. The process forces superficial solutions that may not address the client's fundamental needs. "Competitions make for image-based projects; you have to focus on the big idea to impress the judges," says Schnair.

The risk-reward ratio for architects who participate in competitions can be quite high. Compensation for participants ranges from nonexistent to stipends that may or may not cover the cost of participating. In any case, the cost of doing business here is high, and a few lost competitions can soak a firm's balance sheet with red ink in a hurry. Firms have to be very honest with themselves about whether they can win a competition, and be disciplined about allocating resources to them. Sooner or later, the Chinese will begin making use of qualification-based selection. In fact, Ray Shick of Gensler's San Francisco office notes, "On interiors projects, we are often selected based on our qualifications."

Last but not least, competition winners only take the projects they are selected to do through design development if they can negotiate the contract. After that, most work is handed over to local "design institutes," government-owned architecture firms who handle construction documents and construction administration. Western firms are legally prohibited from participating in these phases and are too expensive to add much value to the process. While U.S. architects continually lobby for more involvement in construction documentation

Practice Matters

and administration to ensure quality, they face an uphill struggle.

... Then, win negotiations

Winning a competition doesn't mean you've got the project. "It only means you have the right to negotiate the commission," says Jacobs. Although modern China only started opening its markets up 25 years ago, people here have been trading with the West since Marco Polo's time, and they know how to drive a hard bargain. Negotiating a job here is like trying to become a supplier to Wal-Mart: The owner may imply that since they will likely be awarding lots of contracts in the future, they should be given a deep discount—for world-class work, of course. Architects must resist the temptation to lower fees and "buy work" in hopes of raising fees on the next project. Next time the client will start negotiations at an even lower price,

if there even is a next time. Clients use local architects' costs as their benchmark, says James F. Porter, AIA, of Altoon + Porter Architects, Los Angeles. "Clients start with the idea that a local firm will cost one-third of what an international firm will, and negotiate from there. You have to convince the client that your

ARCHITECTS MUST RESIST THE TEMPTATION TO "BUY WORK" IN THE HOPE THAT THEY CAN RAISE FEES ON THE NEXT PROJECT.

expertise is worth more, or you will not get enough fee to do a good job."

Part of being tough means paying close attention to the contract. Contracts are written in Mandarin, so get the best lawyer you can afford. In the U.S., architects usually don't elaborate much beyond what standard AIA contracts describe as the end of each design phase. In China, contracts must

state exactly what deliverables the client will receive both at the end of each contract phase and at milestones tied to a payment schedule along the way. Those who don't nail these down may find themselves making endless changes, or simply not getting paid. Some architects insist on a "pay then work" model, where a retainer is paid, in dollars, every month. Also, firms must give clients exactly what they promise during contract negotiations. If a

client has been told a design principal will be leading the team, do not substitute an associate.

The ownership of intellectual property rights (IPRs) is another point for contract negotiations. Clients who commission Western architects to design buildings are making a significant investment. They don't want the architect to resell the design to a competitor any more than the archi-

tect would want a client to copy a protected design without paying royalties for it. In China, the clients have an upper hand because it is so difficult for foreigners to enforce IPRs here. The most practical advice may be to accept the fact that work can always be copied, negotiate a good fee up front, and call it a day.

Probably the greatest danger is not the misappropriation of a design, but that a client will have a design modified to its detriment yet keep the original design architect's name on it for marketing purposes. Jeff Wolfson, a partner who specializes in IPRs with Winston & Strawn, a law firm, suggests that to protect the integrity of their rights, architects negotiate with their clients either co-ownership of copyrights or mutual consent agreements.

Commitment begets opportunity

It might appear that because U.S. firms are limited to schematic and design-development services, over the long haul it will be difficult to maintain a competitive advantage.

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Practice Matters

Western firms can't compete on fees profitably, nor are they able to offer the ease and high level of service that comes with a local architect. But at the moment, the market is robust and growing. Clients not only want their buildings to reflect China's increasing importance in the world; they also want to participate in the design process. "Our Chinese clients understand that the international firms have experience with certain project types that they cannot yet source locally. They acknowledge that they will have to pay a premium, at least in the near term, to import this expertise," says Jeffrey J. McCarthy, AIA, a partner in SOM's Chicago office. And now that China has been accepted into the World Trade Organization, Western firms are finding it easier to get work visas for employees and to set up WFOEs, and the protection of IPRs is improving.

Chinese firm structure is start-

ing to change, too, and that will eventually shift the opportunity equation. Those who work at the design institutes are eager to learn and are quickly picking up technical knowledge. "When we interview design institutes and see their work, their imagery is very mature. It is only a matter of time before they start catching up in detail and substance," says Schnair. The government is also starting to privatize some of the institutes, forcing them to change, as well. Now that they're competing for employees and have to pay higher salaries, some of their cost advantages against foreign firms are eroding slightly. Still, these new firms have a way to go before they master the business principles, such as marketing, that Western firms take for granted.

Some believe the larger threat for the U.S. firms will not come from privatized institutes, but from new

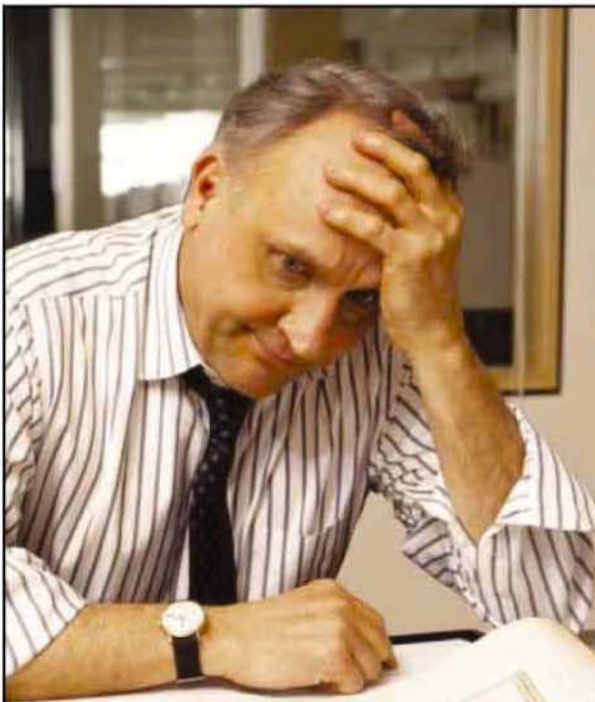
start-up firms. "We see a lot of U.S.-educated Chinese starting firms that represent both competitive choices for design services and future competitors to U.S. firms. We have to help them develop their practices while we continue to provide value to our relationships with them," says Bill Doerge, a principal with the Chicago office of Perkins & Will. These firms have advantages over the institutes: They're nimbler and already know how Western firms work. They have command of both English and Mandarin, but may lack the government connections still critical in China.

What tomorrow will bring

New firms can still succeed in China if they commit to building truly international practices. Firms that are interested in developing business here primarily to offset weakness in the U.S. market are unlikely to make it. "Commitment" means that firms will have to establish not just one office, but several, including some in the interior of the country, where

new markets are going to develop. American partners are going to have to relocate from the U.S. to the mainland. To be considered for future work, these firms will have to develop a Chinese "brand," a "face." These offices will be staffed with local talent, some of whom will be put on management tracks.

Firms that succeed in establishing offices here may one day actually export cost-effective, technical services back to their offices in the U.S. That will allow architects in the U.S. offices to focus on work that can only be done locally, rather than producing labor-intensive work such as contract documents, 3D animation, and renderings. Sound far-fetched? Today, much of what we consume in the U.S. comes from China. Why not architectural services, too? As clients worldwide push for "faster, better, and cheaper" design, China is bound to play an important role. Take a page from other industries and look to China as not only a potential market, but a new source of expertise that will make your firm more competitive. ■



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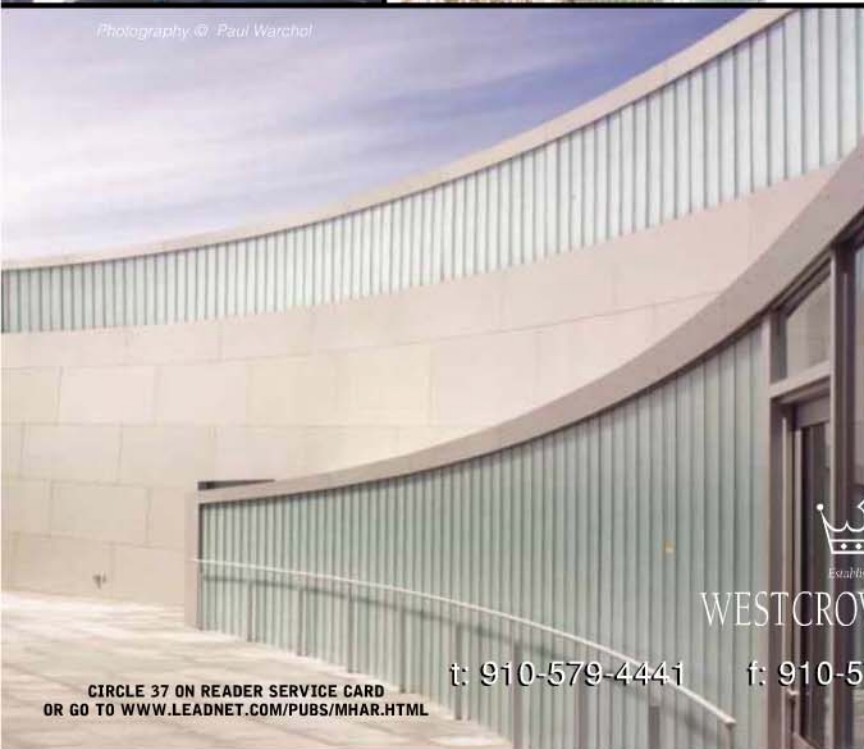
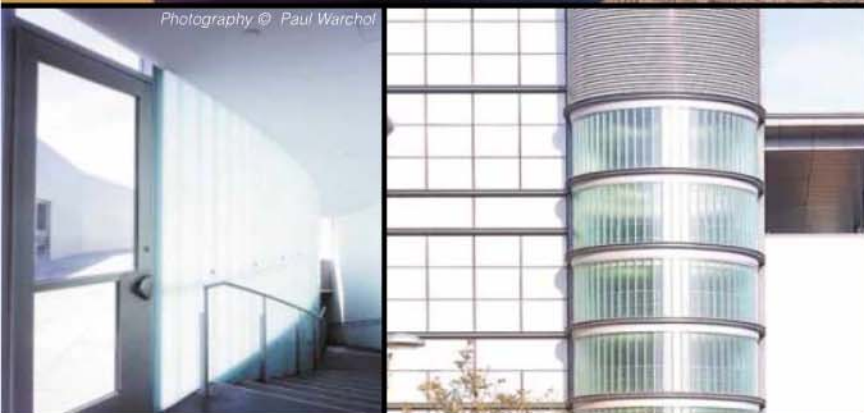
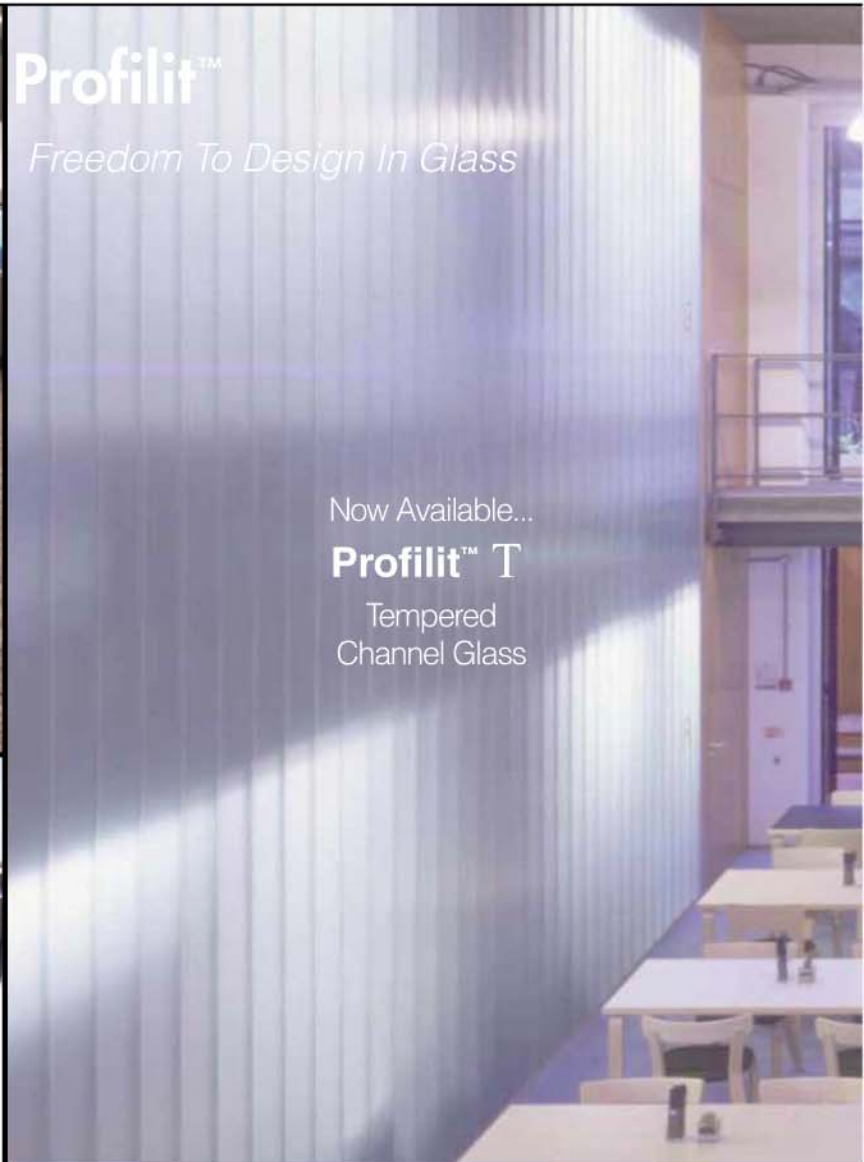
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Out with the old and in with the new around China's Three Gorges Dam. But at what cost?

Correspondent's File

By Jen Lin-Liu

Speaking about a year ago, Chen Zhuyun claimed he wasn't sad at all, despite knowing that his neighborhood, the old town square, and some of his favorite trees had been destroyed to make way for the Three Gorges dam project.

"That's where my old home was," said the 30-year-old taxi driver in a matter-of-fact tone, staring at the vast plot of land. The last crumbled remains of bulldozed buildings were being carted off, part of the cleanup effort that had to occur before the area was inundated by floodwaters. Within six months, the waters of the Yangtze River were scheduled to rise 443 feet above sea level. Chen shrugged, apparently unmoved by changes brought about by the largest dam project in the world. "I have some pictures. That's enough for memory's sake."

In Wushan—located along the banks of the Yangtze River, 400 miles from Beijing, with a popula-

Jen Lin-Liu is a correspondent for The Chronicle of Higher Education. She has also written for Newsweek Asia and The Associated Press.



Three Gorges Dam (left) is flooding towns along the Yangtze. Displaced residents move to "New" Wushan (right).



DEPARTMENTS

tion of 580,000—many resettled residents like Chen aren't looking back. Of course, it's partly because they have been swayed by a huge government publicity campaign, which has emphasized the benefits of the mammoth water project. Forget that the project is affecting 365 townships along the Yangtze River, and an estimated 1.2 million people are being moved to points around the country, by China's own count. Your average Wushan resident could probably recite the

project's advantages more quickly than they could tell you about the Cultural Revolution.

Harnessing the Yangtze means that floods will be more easily controlled. Clean and cheap electricity will be readily available. Ships will be able to navigate better, bringing more economic opportunities. It also took just one quick glance up the steep hills—past the "135 m" and "175 m" signs that marked the eventual rise of the Yangtze in meters—to see why residents were

hopeful: The sparkling buildings of the "new city" shone like beacons in an otherwise gloomy, often fog-shrouded landscape.

Many of the displaced have been pushed farther up the banks to towns like "New" Wushan. The latest river towns are symbolic of China's ambitious—and sometimes unrealistic—approach to modernization. Wushan's slick exterior could fool anyone. Glittering new buildings line wide avenues. The typical white, bathroomlike tiled

Facts About the Three Gorges Dam

After decades of planning and work, China's massive Three Gorges Dam now stands sentry across the Yangtze River. Still a work in progress—it won't be complete until 2009—the gigantic concrete-gravity structure is impounding a lengthy, ribbonlike reservoir stretching to the inland metropolis of Chongqing. Flanked by the world's largest ship locks, which were blasted precisely out of granite outcroppings and lined with concrete, some 25,000 workers have been laboring at a record-setting pace to raise the dam to its 594-foot height. Its purpose is twofold: to limit the great river's devastating

floods and produce a whopping 18,200 megawatts of electricity to feed China's power-hungry economy. The first of the project's 26 turbines went on line last year. The \$27 billion project has long been the world's largest construction project. *John Kosowatz*

- Dam height: 594 feet
- Construction-site area: 5.8 square miles
- Power output: 18,200 megawatts
- Number of turbines: 26
- Dam Length: 7,575 feet
- Ship-lock height: 558 feet
- Ship-lock length: 5,272 feet

Correspondent's File



A worker removed pieces of old Wushan.

buildings found elsewhere in China have taken a shiny pink and yellow polish. Guangdong Road, New Wushan's main thoroughfare, is full of upscale stores selling designer clothes and laptop computers. Climbing a maze of stairs rising to the top of the hill reveals a carefully constructed view of tall buildings against a backdrop of the soon-to-be-inundated Yangtze.

"Compared to all the other new towns on the Yangtze, Wushan has the best shot at being successful," says Xing Zhong, an assistant professor at nearby Chongqing University's City Planning and Design Institute, who also consulted on the planning of Wushan. "It has the best location for tourism."

Indeed, authorities are clearly hoping that tourism will keep Wushan alive.

Officials optimistically project that once the dam project is completed, an annual 20 million tourists will flock to the largest man-made lake in the world. Nestled in between two of the Three Gorges, Wushan serves as the perfect juncture point for boats going north up the Daning River, a tributary of the Yangtze that takes droves of tourists past a smaller, but still spectacular natural

wonder: the Mini Three Gorges.

The primary purpose of building Wushan's new town is still residential settlement, with 45 percent of the new buildings allotted for apartments. But it's telling that more space has been reserved for commercial use (20 percent) than for factories and government-owned operations (15 percent). Much of the commercial space being built will be devoted to tourism and related services, says Xing. A highway that will cut down the commute time between Chongqing and towns lining the Yangtze will allow visitors to reach Wushan in less than 6 hours. The number of hotels in Wushan has increased from one to half a dozen in the past few years. And one of the town's smoke-billowing factories that produces cement will be converted to make souvenirs.

Construction workers are putting the finishing touches on the town square, a \$600,000 project, that features glitzy, but so far vacant, storefronts and a big screen that will air public announcements and films.

Billboards nearby advertise the town's newest project, a "European Street," with a three-quarter-of-a-million-dollar price tag.

But underneath Wushan's sparkling facade, locals are facing the same old problems that exist in China's other cities. Some residents complain that the relocation efforts have been riddled with corruption. Millions of dollars have been invested in construction, but less has gone into job creation. Many residents have been laid off from state-owned enterprises in recent years and scrape a living out of odd jobs or selling wares and snacks on the sides of streets. Some of the town's prime commercial space remains unoccupied, like the Wushan Department Store, whose tall windows reveal only an empty warehouse.

The success of the site as a tourist destination also remains uncertain. Even after the waters rise to their final point, much of the Gorges, which rise above 3,300 feet, will still be visible. But critics

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Correspondent's File

have predicted that damming the Yangtze River will create a large "stinking and stagnant" pool of water, adding that the area will be polluted considerably. "One of Wushan's prime attractions to tourists is the clear and beautiful mountain water that flows toward it down the Daning River. That clear mountain water will be infiltrated as the Three Gorges reservoir is filled," says Mu Lan, the Chinese editor of *Three Gorges Probe*, a newsletter published by the antidam organization Probe International.

And like the dam project itself, the physical sustainability of these towns is uncertain. Moving the displaced residents up the hills is the easiest and most logical solution for the government. In doing so, they are brushing aside a very immediate concern: landslides. Locals say that a landslide in August 1999 condemned part of the old town,

including the Catholic church, and another landslide occurred last March in the new part of the town. No one was hurt in either incident, but it's been enough to force officials to address the problem. Authorities admit that the Three Gorges area is prone to landslides, but say the problem is being solved. Never mind that their means for solving it are a bit suspect: Around town, construction workers are pouring cement on the many precipitous banks and reinforcing them with steel. But, in the event of a landslide, that may not be enough to save some buildings, which jut out of the town's steep hills and are only supported by skinny cement columns. It should be enough to scare residents, but most seem unconcerned—or passive, at best. "It may be dangerous, but what's to be done about it anyway?" said one resident.

The Chinese government has

touted the benefits of relocation, proclaiming that resettled residents are better off than they could ever have imagined. It's true enough that many residents say they prefer the new town to the old one. "I'd say that 70 to 80 percent of the people are satisfied with their new situation," said Father Zhang, a chain-smoking priest who runs the newly built Catholic church that has become a landmark, sitting at the top of Wushan. "They definitely have better housing." Resettled residents brag about their new amenities: private bathrooms, telephone lines, and constant electricity, none of which were standard in the old town.

Even so, the improved conditions have come at a cost, and compensation seems to vary considerably. The Lis, who live in a modern 861-square-foot apartment at the top of Wushan with a panoramic view of the river, were among the fortunate ones. Because they owned their house in the old town, they said they didn't have to

pay anything additional to be relocated. Other families have been forced to use their entire life savings or have resorted to taking out mortgages to pay for their new homes. One couple said that they struggle to pay their monthly mortgage payment of \$25—the price of a sweater at one of Wushan's posh, but empty, stores. And while about half of the residents displaced by China's massive Three Gorges Dam project have been pushed into nearby new towns, the rest have been set on often difficult journeys that take them as far as Shanghai.

A freewheeling, anything-goes attitude takes over Wushan as the sun dips below the tall peaks of the Gorges. Clusters of ballroom dancers waltz away in the town square, and although the dancing starts to fizzle around 9 o'clock in the evening, the cranes continue to move, and the sledgehammers keep on pounding through the night. Only after all the construction ends will the real test for Wushan will begin. ■



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Snapshot



PHOTOGRAPHY: © PATRICK Y. WONG/ATELIER WONG PHOTOGRAPHY

By Ingrid Whitehead

In Austin, Texas, it's been said that the only body of water missing is an ocean. With numerous lakes and watering holes to give an overheated cowboy a cooling dose of H₂O, Austin is the Lone Star State's oasis. One family lucky enough to live lakeside wanted to maximize their use of Lake Austin by adding two boat slips, storage space for water skis and floaters, and a place where they could entertain friends. They hired Austin firm Miró Rivera Architects for the job. " 'Surprise us' was what the client said," marvels Rosa Rivera. The results surprised even the architects, as the project won numerous awards.

Located at the bottom of a 300-foot bluff on Lake Austin, the boat dock is connected to the house by a tram. The project comprises a box, a screen, and a canopy, tucked into a natural recess in the bluff, with the boat slips parallel to the shore. The box has a structural frame of steel I-beams with tube columns that contain the two slips and closet. The screen consists of a lattice of steel tubes spaced 1.5 inches apart. The canopy's white stretched fabric and mast give the structure the appearance of floating, much like the sailboats that inspired its design. ■

A boat dock on the banks of a Texas watering hole





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Cars are replacing bicycles on major streets in Shanghai (above right), as skyscrapers rise all over town. The city, which has a population of about 20 million, now has more than 2,800 buildings taller than 18 stories and another 2,000 being planned.

By Clifford A. Pearson

In scale and pace, the building boom currently sweeping over China has no precedent in human history. From the Three Gorges Dam in Hubei Province (price tag: \$24.65 billion) to the 1,625-foot-tall World Financial Center under construction in Shanghai (price tag: \$825 million), the physical and financial dimensions of what's going up boggles the mind. China is spending about \$375 billion each year on construction, nearly 16 percent of its gross domestic product. In the process, it is using 54.7 percent of the world's production of concrete, 36.1 percent of the world's steel, and 30.4 percent of the world's coal. Funded by an ocean of foreign investments and encouraged by local and national governments intent on shaping a new future, building activity is racing forward. The spiky new skylines of Shanghai and Beijing signal a historic transformation affecting the country's social, political, cultural, and economic spheres. But buildings aren't the only things going skyward; in October 2003, China sent its first man into space. What had been a closed, mostly rural country with a malfunctioning, centrally controlled economy just 25 years ago has emerged as one of the world's fastest-growing, most dynamic nations.

With lofty ambitions come down-to-earth consequences. During the first two decades of the 21st century, 200 million people will migrate from rural China to its cities, states the *United Nations World Population Prospects* of 2002. This monumental shift in population will transform the nation's urban areas, burdening physical and social infrastructures but also fueling an array of building and economic opportunities. Finding jobs for all the rural workers moving to the cities, as well as the people being laid off as giant state-operated enterprises are privatized, will be one of the great tests of the Chinese experiment. While some economists say China cannot continue growing at its current pace (an 11 percent to 13 percent jump in GDP in the second half of last year), others warn that any slowdown would imperil the country's efforts to find jobs for the millions of people looking for work.

For architects, whether foreign or Chinese, most of the action is happening in the cities. As Beijing, Shanghai, Tianjin, Wuhan, Chongqing, Guangzhou, and Shenzhen balloon in size, architects and planners must balance a host of competing demands—for massive amounts of new buildings, modern infrastructure, improved environmental design, and historic preservation. Change one element and you affect all of the others. Build new highways and upgrade city roads, as has been done in

Note: The Chinese usually place a person's family name before the given name, but we have followed Western custom in this issue and put the family name at the end.

For additional coverage of architecture in China, go to www.architecturalrecord.com.

Shanghai, and you create the opportunity for municipal authorities to ban bicycles on major streets (as they did recently). Design a spectacular new high-rise and a finely knit neighborhood of old courtyard houses may be razed (as is happening in Beijing at an alarming rate).

During the past few years, a chorus of observers has predicted dire consequences from China's remarkably rapid changes. The economic bubble will soon burst. Construction will bring environmental degradation. Rapid development imperils the rich social and historic fabric of city neighborhoods. The drive to make a quick profit allows little room for architectural quality. Certainly, all of these dangers are real. But recently, some of the experts who might be expected to sound the alarms are expressing a new sense of optimism.

William McDonough, FAIA, who has made green design an essential element in all of his work, speaks excitedly about China. In 1999, he helped establish the China-U.S. Center for Sustainable Development, whose cochair is Deng Nan, China's vice minister of science and technology and the daughter of Deng Xiaoping, the country's paramount leader from 1978 until his death in 1997. "The Chinese are practical people and they understand that sustainable development is the way to grow," says McDonough. He and his Chinese organization are currently working on four urban design projects, including a sustainable village in Liaoning Province northwest of North Korea, a pedestrian- and transit-oriented new town near Wenling south of Shanghai, and a mixed-use, high-density district in the northeast part of Beijing. McDonough also sees China as an essential element in developing economical solar-energy cells for the entire world. "China is the world's lowest-cost producer," says McDonough, "so once you get the Chinese working on solar cells, you can make solar energy cheaper than coal."

Anyone who has visited China recently after being away for even just a few years notices the large pieces of urban fabric unraveling in major cities. Anthony M. Tung, an architect and former member of New York City's Landmarks Preservation Commission, investigated the situation in Beijing while working on his book *Preserving the World's Great Cities* (Clarkson Potter, 2001). When the Communists took power in China in 1949, imperial Beijing—whose plan dates back thousands of years and most of whose extant buildings and fortified city walls survived from the 16th century—remained largely intact. During the following three decades, however, Soviet-educated planners tore down almost all of the city's imposing walls, moats, and entry portals, while building highways and erecting factories in residential areas.

Today, many of the factories remain in operation, spewing pollution and contributing to acid rain that is eroding the magnificent stone carvings of the Forbidden City. But the Beijing authorities gave Soviet planning strategies the boot and adopted laws in the early 1980s that established 187 developmental control zones around important historic monuments. In theory, these designations limit the height and scale of new developments so they do not impinge on the character of historic landmarks. In practice, enforcement of these control zones has been lax.

While alarmed by the pace of change in Beijing, Tung believes that the regulatory system needed to protect the city's historic fabric is in place. The most important landmarks, such as the Forbidden City and the

Temple of Heaven—which account for about 10 percent of imperial Beijing—have long been protected. "If development in the control zones were properly limited, the city could protect another 20 percent" of historic Beijing, explains Tung. When asked what are the chances of that happening, Tung expresses cautious optimism. Because the Communist government owns most of the city's land, it can control development in a way that is impossible in most other countries. Foreign pressure, especially when linked to the 2008 Olympics, can push the Chinese to enforce the developmental control-zone regulations, he says.

Other strategies to relieve developmental pressures in historic Beijing have been proposed by people involved with the Harvard Design School's Project on the City, the studio taught by Rem Koolhaas and others. After examining hypergrowth in the Pearl River Delta (Hong Kong-Shenzhen-Guangzhou) in the book *Great Leap Forward* (Taschen, 2001), the studio turned its attention to Beijing this past fall. Participants in the studio recommended "land-banking" certain districts, which would restrict development for a designated period, giving residents and planners a key resource in short supply: time to carefully consider what gets built, says Jeffrey Inaba, a principal of AMO who also teaches at Harvard and SCI-Arc. The studio also developed a scheme to build a "massive green belt" outside of Beijing, which would be a megastructure incorporating stacked highways and green, mixed-use buildings.

Although the quality of buildings going up can still be very low, Benjamin Wood, AIA, a partner of Wood + Zapata, says the Chinese have

China's booming construction market: A sampling of current projects



made huge progress since he started working in China in 1998. "In the past, even when Norman Foster did a building, it would look cheap because they used local products," says Wood. "But now Pilkington has a factory in China and you can get top-quality curtain wall and glass." He also marvels at the rapidly improving skills of Chinese architects. "Some of the younger architects worked for world-class architects abroad. Now they've set up their own firms back home and they're starting to do great architecture." Behind all the changes, Wood sees a remarkable, driving force. "They're creating a modern Chinese culture and they're doing it in real time." Westerners accustomed to incremental change need to switch gears to understand what's happening in China. Blink for a moment and you're liable to miss something important. ■

The Pearl of the Orient tower (opposite, top) has become a symbol of the hypergrowth in Shanghai's Pudong district. All over the country, building cranes and giant billboards announce further massive change (opposite, bottom left and right).

PHOTOGRAPHY: © JOHN WANG (OPPOSITE, TOP);
EPA/ADRIAN BRADSHAW (OPPOSITE, BOTTOM TWO)



FUTURE PRESENT

A new generation of Chinese architects is changing the rules of the game

By Nancy Levinson

When the Chinese architect Qingyun Ma graduated from Tsinghua University in 1988, his options for practice in his homeland were limited. Had he remained in Beijing, he would most likely have found himself working in one of the state-run design institutes—that is, in one of the architecture and engineering bureaucracies that for decades produced all significant construction in the People's Republic. As it happened, Ma went abroad for a few years, to study and work in the United States. The years would prove eventful, and when the architect went back to China in the mid-1990s, he returned not to occupy a drafting desk at a big institute but instead to establish MADA s.p.a.m., a Shanghai-based design studio of his very own [RECORD, December 2003, page 80]. That Ma chose to open his own firm certainly reflects the influence of his experience in America, but it owes even more to a profound and ongoing transformation in Chinese architecture: the emergence of private practice.

The rise of private architectural practice in China is best understood within the context of the momentous changes that have been transforming the country for the past quarter century, ever since Deng Xiaoping declared that “to get rich is glorious” and set in ever-accelerating motion its transition from a centrally planned to a “socialist market” economy. Indeed, by the early 1990s, as China's economy began to surge—as its cities became clogged with construction cranes and its urban skylines crowded with office towers designed by foreign firms—it was obvious that the state-sector design institutes had neither the artistic capacity nor administrative agility to meet the new demands or to compete in a globalizing market. “The main reason for the emergence of the private design firm is the vast and previously unimaginable building boom,” says Ma. “The design institutes were not prepared to handle that.” In particular, he says, they were ill equipped to respond to “the enormous number of small and modest projects” that required attention. Usually very large, with staffs of hundreds and even thousands, “the institutes were based on a Soviet model,” says Chen Zhao, a professor of architecture at Nanjing University. “Architects had little choice as to which institute they worked for, and some of the institutes were specialized—one might do airports, for instance, another factories.” This was not, he emphasizes, “a system that encouraged operational flexibility or individual creativity.”

Nancy Levinson is the former managing editor of the Harvard Design Magazine and writes about architecture and design for many publications.

Since reforms in 1995 allowing individual architects, not just design institutes, to be registered, a growing number of Chinese designers have set up their own boutique firms and are now producing innovative work. Four are shown on the opposite page.

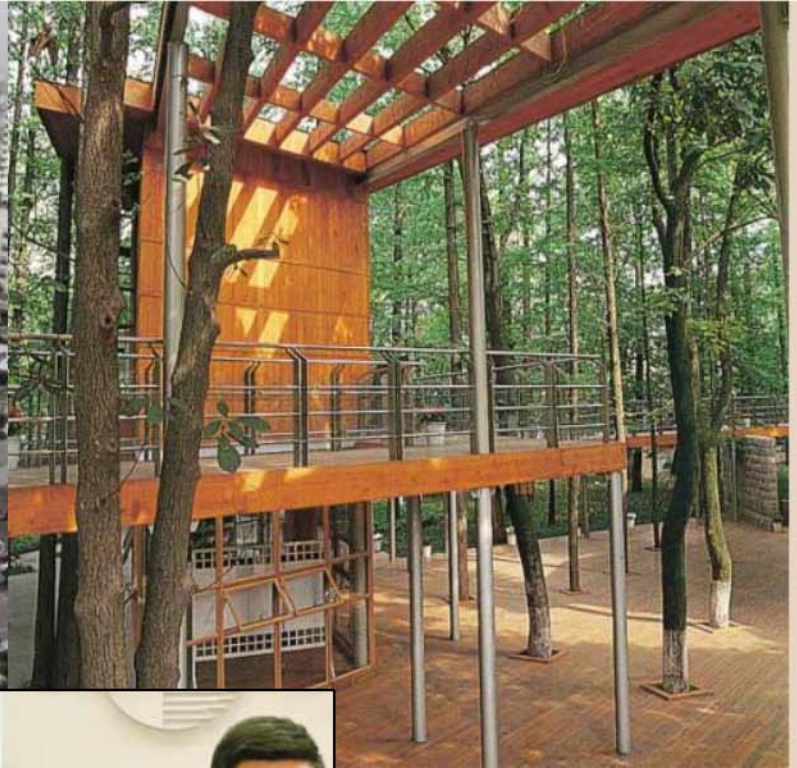
Spurred by the galloping economy, the government initiated a review of the system. According to Qinnan Zhang, who played a central role in the endeavor, first as director of design for the Ministry of Construction and then as secretary general of the Architectural Society of China, the study was detailed and lengthy. “We researched the educational and professional systems in the U.S., Europe, and Japan, and compared them with our own,” Zhang says, noting that their goals were to make Chinese practice internally dynamic and internationally competitive. The painstaking review produced the reforms that have enabled the rise of the private office, the most crucial of which was the Registered Architects Ordinance, passed in 1995, which allows individual architects to be officially qualified to practice. Before then, only the design institutes, as organizations, were eligible for legal professional status. The effects of the ordinance have been dramatic, according to Zhang. Not only has it inspired parallel reforms in design education, including the establishment of a university accreditation system, but it has also, he says, “promoted a variety of forms of practice, prompted a recognition of the rights and responsibilities of individual architects, and encouraged an international outlook.”

Various forms of practice, recognition of individual talent, an international outlook: What the new rules have brought about in China is, in fact, a system that increasingly resembles the pluralized, privatized professional cultures of the United States and Europe, Australia, and Japan. The era of the job-for-life—what the Chinese call the “iron rice bowl”—in the Communist collective is clearly past; architects can now choose from a range of professional options. The design institutes continue to be a dominant presence, to be sure, but these organizations are themselves undergoing radical shifts. While they retain official status, they are also moving toward greater operational independence. “There is a trend toward the institutes becoming privatized,” says Wei Shi, a doctoral student at Tongji University in Shanghai who is studying the new private sector. “For example, some have been bought out by their chief designers, at which point they function much like large, full-service firms in the U.S., competing for commissions and dividing up the profits.”

If the institutes are analogous to big American offices, then the private firms, says Li Hu, who works for Steven Holl Architects in New York City and has started his own firm, OPEN Architecture Studio, “are analo-



Project: Ningbo Cultural Center, Ningbo
Architect: MADA s.p.a.m.,
 Qingyun Ma (right)



Project: West Lake Southern Line Pavilion, Hangzhou
Architect: Original Design Studio, Zi Zhang (left in photo), Ming Zhang (right in photo)



Project: Jianchuan Museum Town, Anren, Sichuan
Architects: Atelier Feichang Jianzhu/Yung Ho Chang (right) and Jiakun Architects



Project: Shenzhen No. 2 Senior Activity Center, Shenzhen
Architect: OPEN Architecture Studio, Li Hu (left)



Young architects such as Xiaohua Fei and Doreen Heng Liu (opposite) are part of an emerging group of design talent that is trying to develop a contemporary Chinese architecture that is Modern yet rooted in Chinese culture.

gous to design-oriented practices in the West.” Usually employing 15 to 30 designers, private firms are proliferating, especially in big cities; citing figures provided by the Ministry of Construction, Shi estimates that the number of private offices in Shanghai increased by more than 10 percent from 1999 to 2001. And these firms operate in diverse ways. Some are licensed, with registered principals, but many are not; an unregistered architect can practice easily by means of strategic joint ventures with a design institute, or more simply by retaining a licensed firm to stamp drawings. Chinese practice thus accommodates a range of possibilities, from the big bureaucracies to the fledgling studios. In this way, it fits into a larger social pattern, says Stanislaus Fung, a professor of architecture at the University of New South Wales in Sydney. “To understand the diversity of practice types,” says Fung, “it is useful to know the Chinese concepts *guanfang* and *minjian*, which translate loosely as ‘official’ and ‘unofficial’ or ‘of the authorities’ and ‘of the people.’ They are not quite opposite, but rather overlapping, zones. People move back and forth between them, and this movement makes many things possible.”

Whatever their official status, many of the new private firms share what Wenjun Zhi, editor of *Time + Architecture*—a progressive bimonthly published by Tongji University—describes as an “ethos of experimentation.” Like Zhang, Zhi views privatization as a critical development in the ongoing effort to raise the quality of Chinese architecture. “Studios encourage a personal approach, the kind of commitment that inspires an architect to strive to do better work, an approach that was rare in the large collective.” The March/April 2003 *Time + Architecture*, which focused on the rise of private practices in Shanghai, offers a well-illustrated tour of the work of some new firms—much of which fits neatly into the contemporary neo-Modernist idiom. High points include a kindergarten project in Dalian, by Standard Architecture; a courtyard landscape for the North China Airline Office Building, by Atelier 100s+1; a woodland pavilion in Hangzhou, by Original Design Studio; a translucent-walled public toilet in a Shenzhen park, by X-Urban; and the sales office of a company called American Rock, by United Design Studio.

As their studio names suggest, these Chinese architects are familiar with the sort of Western practices often labeled “alternative” or “critical.” But unlike their counterparts in the East Village or East London, where such practices often generate little but paper projects, private practitioners in China are benefiting from an abundance of opportunities to build. Yet this abundance poses its own peculiar problems. “While a young architect in New York spends a lot of time making contacts that might lead to good projects,” say Ma, “we have to be careful to avoid meetings that might lead to bad projects.” Or, as Yung Ho Chang, a founder of the Beijing firm Atelier Feichang Jianzhu, puts it, “One of the biggest challenges is time. There is so much emphasis now on speed, and in some projects design and construction are happening simultaneously.” Chang is now collaborating with Jiakun Liu, who heads Jiakun Architects in Chengdu, on a master plan for Jianchuan Museum Town, a grouping of museums for a private client who has collected artifacts from the Cultural Revolution and other important eras in Chinese history. “For the master plan, which is about 20 million square feet,” says Chang, “we were given just six weeks.” And in addition to dizzyingly quick schedules, architects must contend with construction processes in which they typically play little part. “It’s very easy to get a commission,” says Chang. “It’s much

harder to see that it gets built the way you want. Once a building is under construction, the construction manager answers to the client, not the architect.” Doreen Heng Liu, a recent Berkeley graduate who practices with the Fok Foundation in Nansha, describes the difficulties her firm confronted during the construction of the Nansha Science Museum. “We developed the concept and design, and the client hired a design institute to do the construction drawings,” she said. “But they could not do sophisticated details. And when I visited the construction site to inspect the job, the workers were upset—it’s not yet the custom in China.”

Whatever the challenges, for a growing number of Chinese architects, private practice permits valuable freedoms: Like their counterparts in the West, they can pursue the twin goals of profit and prestige. Profit exerts, perhaps, the stronger pull. “For many Chinese,” says Shi, “private practice is largely a way to achieve the bourgeois lifestyle that’s now possible here—a way to get that brand-new Audi.” But the chance to develop as an architect, to refine an artistic vision, is also a powerful spur to some who have set up studios. And like the new Audi and the lifestyle it signals, the prospect of personal recognition is something the Chinese haven’t yet learned to take for granted. “Until recently, buildings were not identified with their architects but with their programs or clients,” says Zhao. “Most Chinese would have no idea who designed the buildings of Tiananmen Square.”

Were Dongri Zhao and Bo Zhang, the chief designers of the Great Hall of the People, practicing today, it’s unlikely they would be laboring in anonymity. The rise of private practices has enhanced the cultural prestige of architects, whose new visibility is evident in various ways. The work of Chinese architects has been exhibited in galleries both in China and abroad (most recently in last year’s Pompidou Center show, *What About China?*). It is featured increasingly in consumer as well as professional magazines. And it is even starting to attain that peak of media culture—brand recognition. Western architects have long had brand-name appeal in China, but these days, progressive clients are increasingly likely to hire local talent to lend glamour to a project. When the developers Shiyi Pan and Xin Zhang, of the Beijing-based SOHO China real estate company, sought celebrity architects to design the villas of the Commune by the Great Wall—an upscale development near Beijing, whose Web site urges potential buyers to “collect the art of architecture”—they readily filled their roster with Asian architects. The value of a prestigious name is even inspiring design institutes to set up personalized studios within their organizations, partly to reward star designers and partly to attract clients; for instance, Kai Cui, one of China’s most prominent architects, and one of the Great Wall Communards, runs his own studio at the China Architecture Design and Research Group in Beijing.

Privatization is still a recent phenomenon in Chinese practice; its already substantial effects are undoubtedly the early stages of a fundamental transformation of the country’s architecture profession. And for some designers, one of the critical aspects of this transformation will be an exploration of the very nature of Chinese architecture. Owing to its long isolation and tumultuous 20th-century history, “China did not participate in the modern era,” notes Nanjing University’s Zhao. “Inevitably, we have had to import modernity, in both theory and practice, from the West.” For some Chinese architects, then, a pressing question emerges: What will be the characteristics of an architecture both contemporary and Chinese? “This is a crucial matter,” says Chang. “The economy is giving us an extraordinary chance to make buildings. But this chance has made us realize that we have an even bigger opportunity, which is to participate in defining contemporary Chinese culture.” ■

From institute to studio

To understand how significantly Chinese architectural practices have changed in recent years, it would be useful to have on your desk two very different books. *New Architectures in the Capital*, a large-format compendium put out by the Beijing Publishing House in 1995, features 50 projects dating from the mid-1950s to the early 1990s. Selected by the Architectural Art Committee of the Capital, all were produced by one or another of the state-run design institutes. And although they vary considerably in program and style, they offer a revealing view of Chinese building production from the revolutionary era of Mao Zedong to the reformist generation of Deng Xiaoping.

There are the massive buildings of Tiananmen Square, including the Great Hall of the People and the Chinese History Museum, both opened in 1959 to commemorate the 10th anniversary of Mao's taking power, and rendered in a lean, Stalinist-influenced Neoclassicism. There are the tourist hotels, such as the 1989 Palace Hotel and the 1987 Liu Ting Hotel, both in Beijing, which mix traditional Chinese elements with Western construction, an approach that resulted in the decidedly unsatisfactory "big roof" style—Modern buildings with pagoda tops. And there are newer complexes, such as the Beijing Customs Office Building of 1990, and the Tanqiao Department Store of 1991, tricked up in a kitschy commercial Postmodernism that would make John Portman blush.

In *Tu Mu: Young Architecture of China*, the reader will find no monumental government set pieces, no steel-framed towers with Ming dynasty motifs. Although "tu mu" is the historical Chinese term for architecture—it refers to the traditional materials of earth (*tu*) and wood (*mu*)—the projects in this slender paperback, which was the catalog for a 2001 exhibition at the Aedes Gallery in Berlin, are rigorously contemporary and amply justify the distinction of an exhibition in Europe. But just as notable as their quality is the professional framework of their production: The projects are the work of private design studios, a type of practice long taken for granted in the West but only recently possible in China.

There are spare and elegant domestic projects, such as the live-work studio created by Ai Wei Wei, and the Y-shaped Split House, by Atelier Feichang Jianzhu (page 94), which is part of the Commune by the Great Wall, a neo-Modernist housing development near Beijing. There are sleek urban places such as the Ningbo Cultural Center (page 75), a competition-winning project by Qingyun Ma, principal of MADA s.p.a.m. And there are strikingly Minimalist institutional buildings, including the Luyeyuan Stone Sculpture Museum in Chengdu, by Jiakun Liu (page 86); a student dormitory in Nantong by the partnership Nianda Jianzhu; and the Wenzhang College Library, by Shu Wang, a serene white pavilion overlooking a lake made from a former clay quarry.

That only half a dozen years separates the publication of the two books can be viewed as one measure of how swiftly architectural practice is changing in China. And there seems little doubt that the changes will continue, and that their unfolding will be one of the most interesting and exciting architectural developments of the next decade. *N.L.*



Project: Public Toilet,
Shenzhen

Architect: X-Urban
Consultants, Xiaohua Fei
(right)



Project: Nansha Science
Museum, Nansha
Architect: Fok Foundation
Design Division,
Doreen Heng Liu (right)





Reflections on Chinese landscape design and





With the largest imperial garden in the world, the Summer Palace outside of Beijing expresses the Chinese love of manipulating nature. Manicured and

the enduring power of history and context



teased, enhanced with man-made bodies of water and embellished with handcrafted structures, this landscape is anything but wild. European forces burned down the original 18th-century palace in 1860, but the Chinese rebuilt it within 35 years. Today, it remains a touchstone of Chinese design. CAP

Photography by
Andy Ryan

NATIONAL GRAND THEATER

Paul Andreu's futuristic eggshell points Beijing in a new direction

PROJECTS

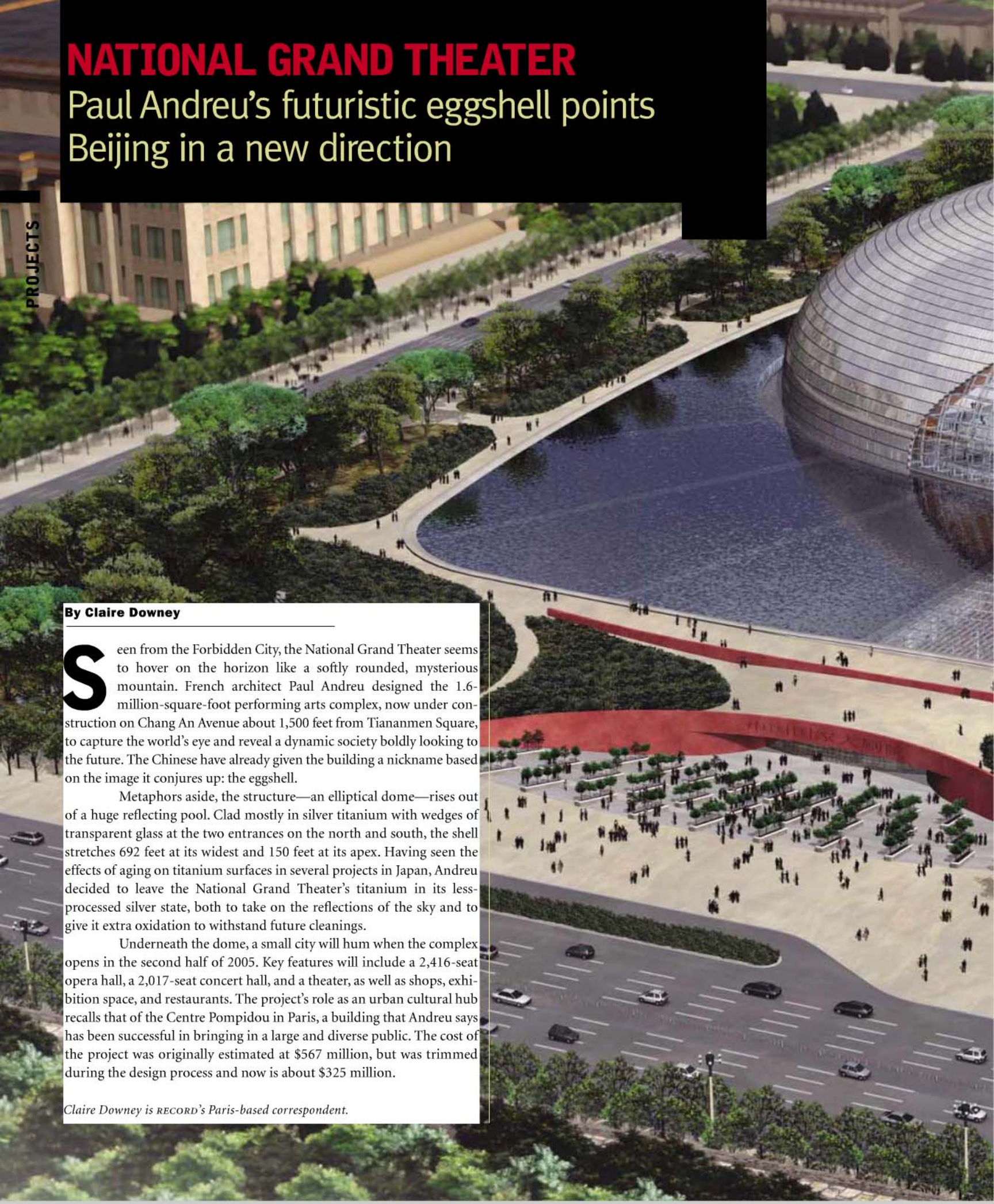
By Claire Downey

Seen from the Forbidden City, the National Grand Theater seems to hover on the horizon like a softly rounded, mysterious mountain. French architect Paul Andreu designed the 1.6-million-square-foot performing arts complex, now under construction on Chang An Avenue about 1,500 feet from Tiananmen Square, to capture the world's eye and reveal a dynamic society boldly looking to the future. The Chinese have already given the building a nickname based on the image it conjures up: the eggshell.

Metaphors aside, the structure—an elliptical dome—rises out of a huge reflecting pool. Clad mostly in silver titanium with wedges of transparent glass at the two entrances on the north and south, the shell stretches 692 feet at its widest and 150 feet at its apex. Having seen the effects of aging on titanium surfaces in several projects in Japan, Andreu decided to leave the National Grand Theater's titanium in its less-processed silver state, both to take on the reflections of the sky and to give it extra oxidation to withstand future cleanings.

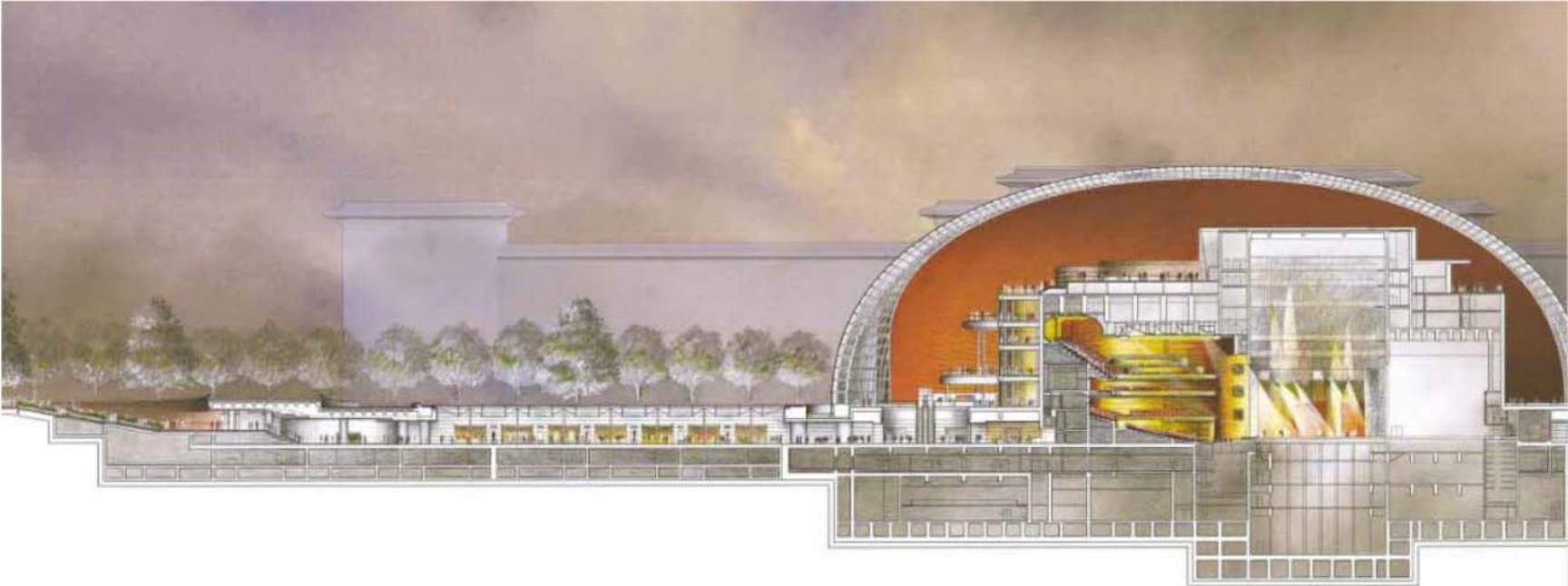
Underneath the dome, a small city will hum when the complex opens in the second half of 2005. Key features will include a 2,416-seat opera hall, a 2,017-seat concert hall, and a theater, as well as shops, exhibition space, and restaurants. The project's role as an urban cultural hub recalls that of the Centre Pompidou in Paris, a building that Andreu says has been successful in bringing in a large and diverse public. The cost of the project was originally estimated at \$567 million, but was trimmed during the design process and now is about \$325 million.

Claire Downey is *RECORD's* Paris-based correspondent.





Visitors will enter the theater complex through a 195-foot-long glass-roofed passage below the immense reflecting pool. While most of the dome will be clad in titanium, clear glass will cover a flaring section at the entry and exit.



The building's curving form hovers above Tiananmen Square (opposite, top right), and its dramatic atrium is taking shape (opposite, bottom right). The main entry (below) will be from the north, the direction of the Forbidden City. A series of performing arts halls will sit under the dome (above).







As the director of architecture and engineering for Aéroports de Paris (ADP) until a year ago, when he started his own firm, Andreu gained a lot of experience handling crowds and learned to give people freedom to move as they please within a space, rather than trying to manipulate their every step. At ADP, he made his mark with dynamic projects such as Terminal 1 at Roissy-Charles de Gaulle, which moved travelers through a central atrium by way of crisscrossing glass tubes; the glass-roofed Exchange Module at Charles de Gaulle [RECORD, January 1996, page 76]; and the sleek design of the new Shanghai-Pudong Airport [RECORD, July 2000, page 162].

Andreu won the commission for the National Theater in 1999, after a competition that included invited architects and others, like him, who qualified for open entries. It was, in Andreu's words, "a very long process and at one point, I almost pulled out." During an 18-month period, the client rethought certain aspects, such as the project's siting, and Andreu made design changes. But his essential concepts remained constant: no bad facades, no back of house, and all parking and technical support below ground. In addition, he insisted that the opera hall—the most important piece of the project—be positioned in the center of the project, and the building be on axis with the Great Hall of the People next door. His futuristic design and foreign nationality, though, drew much criticism from established Chinese architects and even led to a short halt in the project in 2000.

As executed, Andreu's design creates a series of envelopes and layers of activity—even the pool will double as an ice rink in winter months. Visitors will enter from the north, through a 195-foot-long glass-roofed passage below the pool. In the grand atrium, each per-

The 2,415-seat opera hall (right in rendering above) will be wrapped in a translucent curtain of metal mesh, so figures moving behind it will be part of the show. Curves and metal mesh also predominate inside the hall (opposite, bottom). Visitors arrive in the grand atrium from below, by way of stairs and escalators (opposite, top).



formance hall will stand out with a distinct form. The opera hall, for example, will be covered with a scrim of gold-toned metal mesh. Inside, the seats will fan out in a wide curve and the room will have no visible corners, which didn't please the acoustic consultant. To improve the acoustics, Andreu employed woven metal fabric to hold the curved lines, allowing sound to pass through to straight walls behind. The spaces between the mesh and the walls can be backlit with variable, colored lighting.

The smaller theater will have 1,040 seats, and silk-covered walls, and will be used for Peking operas, whose traditional form of performance requires close contact with the audience. In contrast, the columns of the rectangular, white concert hall will provide the listener with distant points on which to rest the eye. For all of these theaters, the storage, technical support, and even delivery areas will be underneath the main plaza level, so they do not interfere with activities above. The project's vertical layering will create features such as a terrace above the opera, from which visitors will be able to see over the Forbidden City and the government buildings surrounding Tiananmen Square.

The first of Beijing's "grand projets" leading up to the 2008 Olympics, the National Grand Theater has already blazed a new trail, which international architects are following. As Andreu explains, his building is "creating continuity and rupture, but without causing conflict." ■

Project: National Grand Theater, Beijing

Architects: Paul Andreu Architecte and ADP—Paul Andreu, François Tamisier, Hervé Langlais, Alain Le Pajolec, Felipe Starling

Engineer: Setec





LUYEYUAN STONE SCULPTURE MUSEUM

Jiakun Liu creates a dramatic setting for art

By Clifford A. Pearson

Architect Jiakun Liu designed the Luyeyuan Stone Sculpture Museum as a journey, one that uses both timeless and modern means to take us from the everyday world to someplace extraordinary. Like most trips today, this one begins in a parking lot. Getting out of their cars, visitors encounter trees that screen the parking lot from the museum and divide the flat, 1.5-acre property along the Fu River into several discrete areas, creating a sequence of spatial experiences.

The name of the location, Luyeyuan, comes from the Chinese word *luye*, which means a field with deer and refers to the places where the teachings of the Buddha, in his incarnation as Sakyamuni, extend. Appropriately, the architect laid out a meandering path for visitors to follow, with one branch taking them to a simple ancillary building with offices and storage and another leading past a rebuilt straw farmer's house now used as a lecture hall, through a glade of bamboo trees, and finally to a long concrete ramp spanning a small lotus pond. "Walking along the woods and then across them is an important factor in creating a mental sequence," says Liu. By moving visitors through the landscape, the architect alters their perspective and prepares them for the museum experience. As it extends over the pond, the ramp rises slowly, splitting a pair of willows, and ends at the recessed entry to the museum.

Contrasting simple, solid forms with various kinds of voids, Liu creates a dramatic setting for Buddhist stone sculptures from the Han Dynasty (206 B.C.–A.D. 220) to the Song Dynasty (960–1125). From the entry ramp, which pierces the concrete enclosure of the 9,700-square-foot museum at the second floor, visitors move through a double-height space and then to galleries. The second-story exhibition space wraps around a roof court, which has the added attraction of a covered landing, reached by an outdoor stair and offering views of the river and the surrounding area. On the first floor, the architect placed more galleries, as well as a small multifunction room and an office.

Using the same rough concrete walls on the interior as he does

The museum's architecture presents a sequence of solids and voids, starting with a concrete ramp penetrating a recessed entry (top right) and continuing with an interior bridge crossing a two-story-high atrium (opposite). Like the main building, an ancillary structure (bottom right) quietly connects with the landscape.



on the exterior, Liu gives the museum the feeling almost of “an underground palace,” which visitors explore from top to bottom. He enhances the effect by inserting clear glass at the intersections between the building’s masonry volumes, a strategy that protects the art from too much daylight and emphasizes contrasts between solid and transparent, earth and heaven.

Because the art inside is stone carvings, Liu wanted the museum itself to tell “an architectural story of man-made stone.” To this end, he designed the building with a concrete frame and double walls made of an unusual combination of poured concrete and shale brick. Owing to the limitations of the local building trades in this part of Sichuan Province, the architect used the inner brick wall as a template, ensuring a vertical pour for the wall. Shale bricks also provide formwork to create a grid pattern on the concrete, which gives the walls texture and hides imperfections in the exposed material.

While many Modern buildings in developing countries appear as alien objects with few connections to the local culture or building traditions, the Luyeyuan Stone Sculpture Museum seems firmly rooted in its place and society. Using a simple palette of rugged materials and a powerful vocabulary of Modern forms, the architect has created a dramatic structure that underscores the spiritual impact of the museum’s art collection. In the process, he has shown how architecture can employ old skills and new approaches to deepen our appreciation of nature, art, context, and construction. ■

Project: Luyeyuan Stone Sculpture Museum, Xinmin, Sichuan Province

Client: Zhong Ming

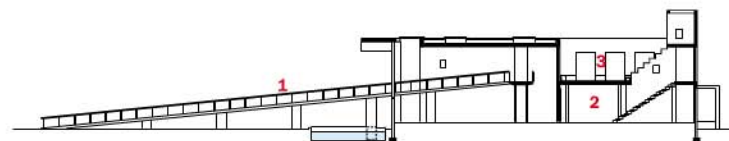
Architects: Jiakun Liu in collaboration with Wang Lun

Structural engineer: Zhao Rui Xiang

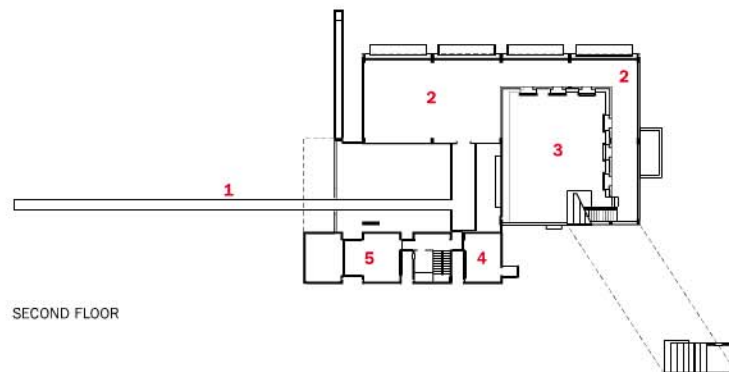
Contractor: GoArchit Art Engineering Company

The architect carefully controlled the amount of daylight coming into the museum to provide dramatic lighting for the artwork and focused views of the surrounding area (opposite, bottom). He also used glass as a way of separating the heavy forms of the building’s enclosure (right and opposite, top).

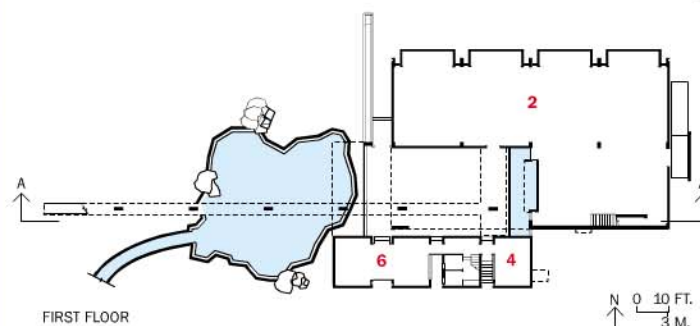
- | | |
|---------------|------------------|
| 1. Entry ramp | 4. Office |
| 2. Exhibition | 5. Curator |
| 3. Roof court | 6. Multifunction |



SECTION A-A



SECOND FLOOR



FIRST FLOOR





The first three phases of construction (site plan, opposite) include 3.25 million square feet of apartments, offices, shops, and parking. The architects designed outdoor spaces, including plazas and courtyards between the buildings (this page) and roof gardens on top (not shown).



JIAN WAI SOHO

Riken Yamamoto creates a posh new address for Beijing

By Naomi R. Pollock, AIA

Tokyo architect Riken Yamamoto is no stranger to large-scale master plans. In Japan, Yamamoto is an expert at creating campuses from scratch and turning tired urban districts into cutting-edge housing blocks. But the 7.5-million-square-foot Beijing Jian Wai SOHO project is by far the biggest of the big projects to come across Yamamoto's drawing board to date. The result of an international design competition held in 2000, the first stage of the seven-phase development, which includes a mixture of apartment towers and low-scale commercial space, was completed in December 2003.

Located in Beijing's central business district about 1.5 miles east of Tiananmen Square, the new construction replaces a 1950s era steel factory with a forest of luxury apartment buildings marketed to wealthy Chinese and foreigners. "[W]e are trying to create a new landscape that has never before been seen in Beijing," explains Yamamoto. The developer, SOHO China, established itself as one of the country's most sophisticated with its Commune by the Great Wall, a collection of villas designed by innovative young architects from around Asia (see article on the Split House, page 94) and recently hired Zaha Hadid to master plan a large mixed-use project in Beijing.

Creating a new landscape, of course, fits in perfectly with all the change occurring in a city characterized by dense residential districts set between broad boulevards. Yamamoto's idea is to separate pedestrian and automobile traffic by confining cars to below grade and people to the landscaped ground level where apartment towers alternate with low-scale commercial buildings to form a loose checkerboard plan. "By placing service access for the commercial facilities as well as car access for each dwelling at the basement level, the entire ground surface becomes liberated for pedestrians," explains Yamamoto. Instead of organizing the project around a large park or other urban-scaled focal point, Yamamoto riddled the ground plane with sunken gardens that knit the two levels together and let daylight filter through to even the lowest recesses.

While the buildings, both large and small, fit into an orthogonal grid, the entire composition is cranked 25 degrees to meet surrounding streets and the Tonghui River running alongside the property. This orientation coupled with variations in the height of the apartment towers (which become progressively taller the farther they get from the water) make efficient use of the land and bring sunlight to each tower.

Given the scope and fast-tracked schedule of this project, it was too big even for Yamamoto to do alone. So after winning the competition, he enlisted the aid of two young Tokyo firms to help with the project's commercial components. Under Yamamoto's aegis, Kazuhiro Kojima/C+A is developing independent commercial buildings on the property, and Mikan is designing shops at the base of each apartment



Yamamoto set the apartment towers (1) and mid-rise office blocks (2) within a checkerboard, then shifted the grid to respond to the Tonghui River (below). Two office wings (3) sit to the east, while future phases will be to the west (not shown).



tower as well as those ringing the site's perimeter. The local firms are Beijing New Era Architectural Design and Beijing Dongfang Huatai Architecture and Engineering.

Yamamoto kept the apartment towers for himself, having established a reputation for innovative housing design with projects such as Inter-Junction City, built in the early 1990s in Yokohama, and Block 1 of Shinonome Canal Court in Tokyo, which was completed last spring and is part of a district that includes housing projects by Toyo Ito, Kengo Kuma, and others. The individual units at Jian Wai, many of which are as large as 3,000 square feet, combine dwelling and work areas and have few fixed partitions, so tenants can divide the spaces as they see fit.

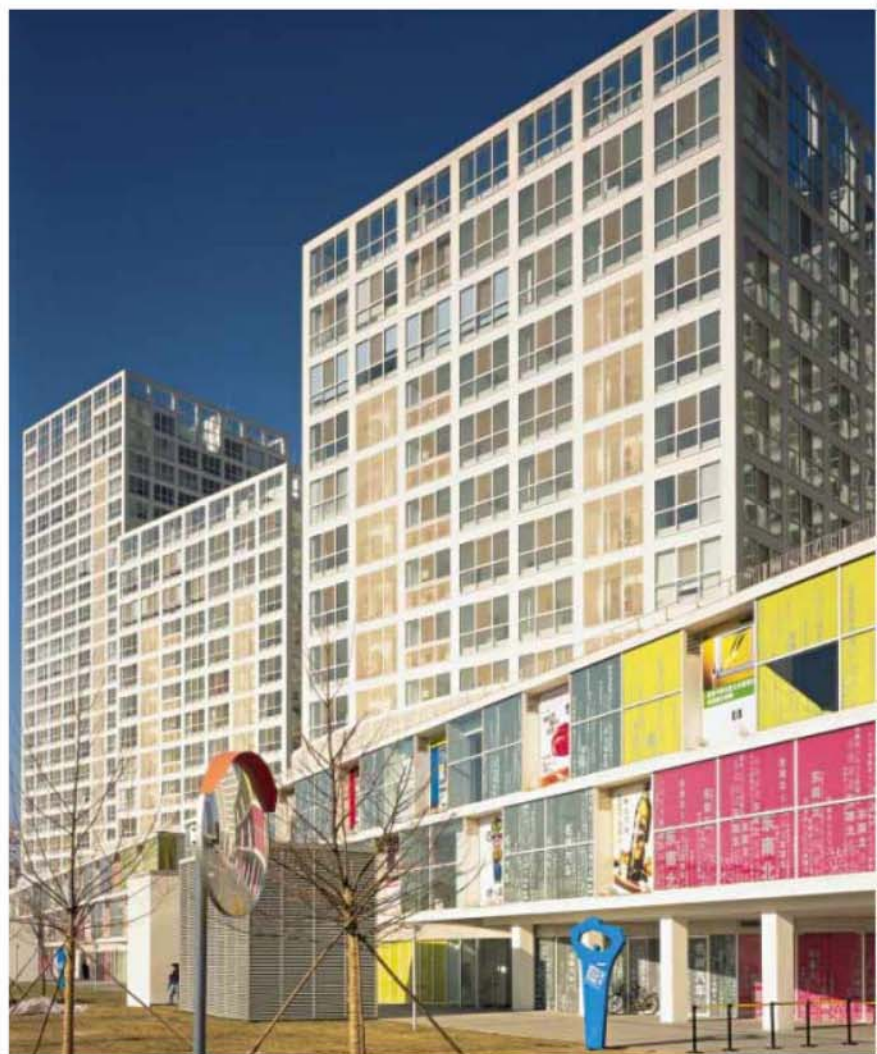
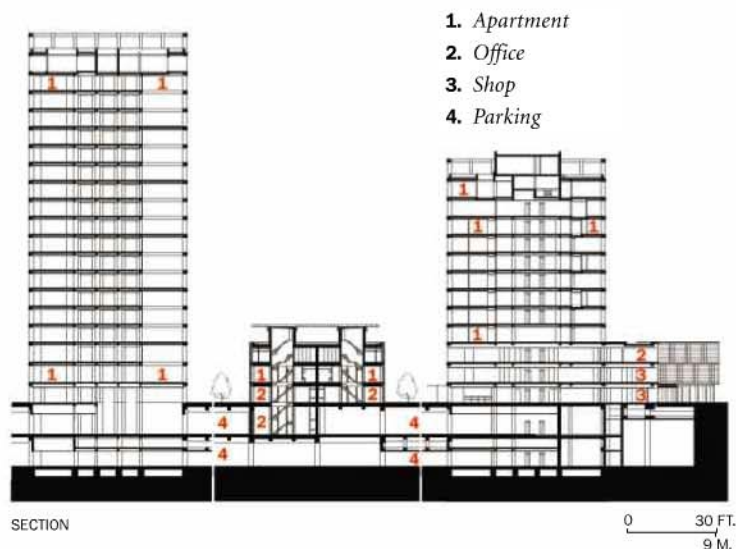
To maintain harmony at the ground level, Mikan devised a modular system for the shop fronts. But it also accommodated local practices by supplying plenty of display windows and recesses for signage. "We had to find a balance between order and freedom," explains Manuel Tardits, one of Mikan's partners. Mikan's system dovetails with Yamamoto's elevations of simple white columns and beams. "I concentrated on creating an utterly abstract expression," so the buildings might take on the character of the people and activities within, says Yamamoto.

Like Beijing, the Jian Wai complex continues to grow. The company plans several more phases, pushing the number of apartments to nearly 2,000 by next year. ■

Project: *Beijing Jian Wai SOHO, Beijing*

Architect: *Riken Yamamoto & Field Shop—Riken Yamamoto, Keiichiro Sako, Masashi Hino, Mari Tochizawa, Issei Kasajima, Nobuhiro Nakamura, Manabu Maeda*

Associate architects: *C+A; Mikan; Beijing New Era Architectural Design; Beijing Dongfang Huatai Architecture and Engineering*

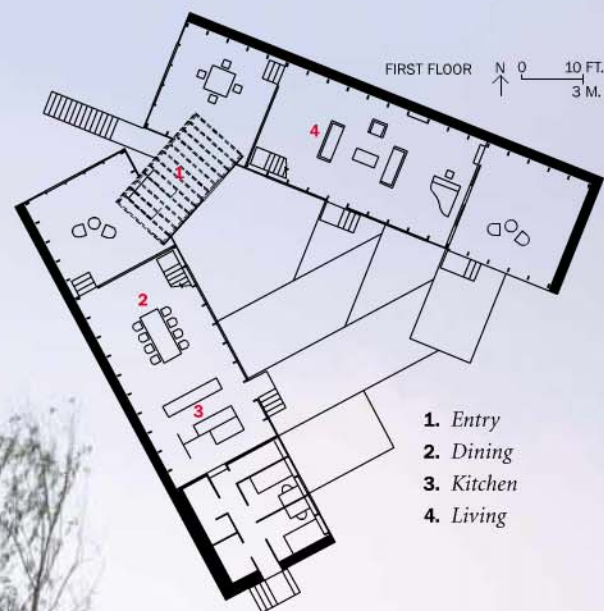




By raising the buildings above parking, the architects created separate realms for pedestrians and cars (this page and opposite, bottom). Mid-rise office blocks (opposite, top) help define courtyards and gardens between the buildings.



The two wings of the 4,800-square-foot house flare out to embrace the landscape (above). The entry (opposite, bottom) is a glass box connecting the wings (below). Like courtyard houses in the city, the main rooms (opposite, top) in this country house look onto a central garden space.



SPLIT HOUSE

Yung Ho Chang designs a residence that communes with nature

By Clifford A. Pearson

Capturing nature has obsessed Chinese artists for thousands of years, from landscape painters evoking leaf-dappled scenes to architects framing exquisite garden views. In that spirit, Yung Ho Chang and his firm, Atelier Feichang Jianzhu, designed Split House to embrace mountain and water (*shan shui*)—both literally and figuratively. The idea was “to transplant the traditional Beijing courtyard house (*si he yuan*) from its dense urban context into the pristine landscape,” explains Chang. In the city, courtyards are typically surrounded by rooms. But in Yanqing, near the Great Wall north of Beijing, the architects split the house open, allowing the mountains to enclose the triangular courtyard on one side while the building provides shelter on the other two sides. Splitting the house into two wings also preserved a group of trees on the site and brought views of the dramatic landscape into the interior spaces. Chang managed to capture water, too, rerouting a small stream on the property so it runs through the courtyard and underneath the glass floor of the glazed entry foyer.

Split House is one of 12 residences designed by innovative Asian architects at Commune by the Great Wall, a project developed by SOHO China. Instead of hiring big-name firms to design the houses, SOHO gave the commissions to up-and-coming architects: Chang, Cui Kai, and Antonio Ochoa from China; Shigeru Ban, Kengo Kuma, and Nobuaki Furuya from Japan; Gary Chang and Rocco Yim from Hong Kong; Kay Ngee Tan from Singapore; Seung H-Sang from South Korea; Kanika from Thailand; and Chien Hsueh-Yi from Taiwan.

For Split House, Chang borrowed the old notion of using *tu mu* (earth and wood) as the primary building materials. In his contemporary version, a laminated-wood frame and rammed-earth walls create the basic enclosure, with floor-to-ceiling glass opening to the courtyard and the views. Since space flows in each of the one-room-wide wings, Chang was able to eliminate all hallways and create an efficient plan.

Chang sees the design as a flexible prototype, which could be adjusted to various sites by changing the angle of the plan: Depending on the site and needs of the client, the Split House could become a parallel house, a right-angle house, a singular house, or a back-to-back house. ■

Project: Split House, Yanqing, Beijing

Architect: Atelier Feichang Jianzhu—Yung Ho Chang, Xianghui Liu, Xiang Lu, Lucas Gallardo, Hui Wang, Yixing Xu

Consultant: Minsheng Xu (structural)



XINTIANDI

Wood + Zapata reinvents Shanghai's future by including its past

By Jen Lin-Liu

In a city that has looked to the West for architectural inspiration during the past decade, not to mention during its colonial heyday, architect Benjamin Wood, AIA, did something that many people thought was impossible: He sold the idea of Shanghai back to its own residents.

With Xintiandi, Wood has transformed two city blocks of forlorn residential buildings from the 1920s and '30s into a lively entertainment and retail quarter with chic fusion restaurants and some of China's favorite American brands, such as Häagen-Dazs and Starbucks. Tour groups from Japan and Hong Kong now wander through the cobblestone alleyways and arcades where Wood added new structures while adapting the surrounding older buildings to modern uses. By day, professionals lunch and make deals at tables lining the walkways, while at night they chug pints of lager and tap their feet to the sounds of live music. On busy days, more than 30,000 pedestrians stroll through Xintiandi. Although based in Boston, Wood's firm, Wood + Zapata, now has a busy 20-person office in Shanghai working on other projects near Xintiandi and in neighboring cities.

Xintiandi (pronounced *shin-tian-dee*) opened its first stores at the end of 2000 and is just the first phase of a mixed-use community called Taipingqiao (pronounced *tai-ping-chow*) that will include two luxury hotels, a 68-story office tower, 6,000 apartments around a man-made lake, a refurbished antique street, and five live theaters. The developer for the entire area is Shui On, a major Hong Kong-based company that began working in Shanghai in the mid-1980s.

Wood credits the project with giving residents a sense of home-grown pride. In contrast to the many American-style shopping malls and office towers in the city that mimic those in the West, Xintiandi incorporates the *shikumen*, a traditional Shanghai dwelling, into its design. The success of Xintiandi convinced other developers in Shanghai that "old buildings in China are not worthless," says K.B. Albert Chan, the general manager for planning and development at Shui On. But during the building phase of the \$150 million complex, the message was not an easy one to convey. The banks were wary enough that Vincent Lo, who heads Shui On ("a visionary," Wood says), had to finance the project out of his own pocket.

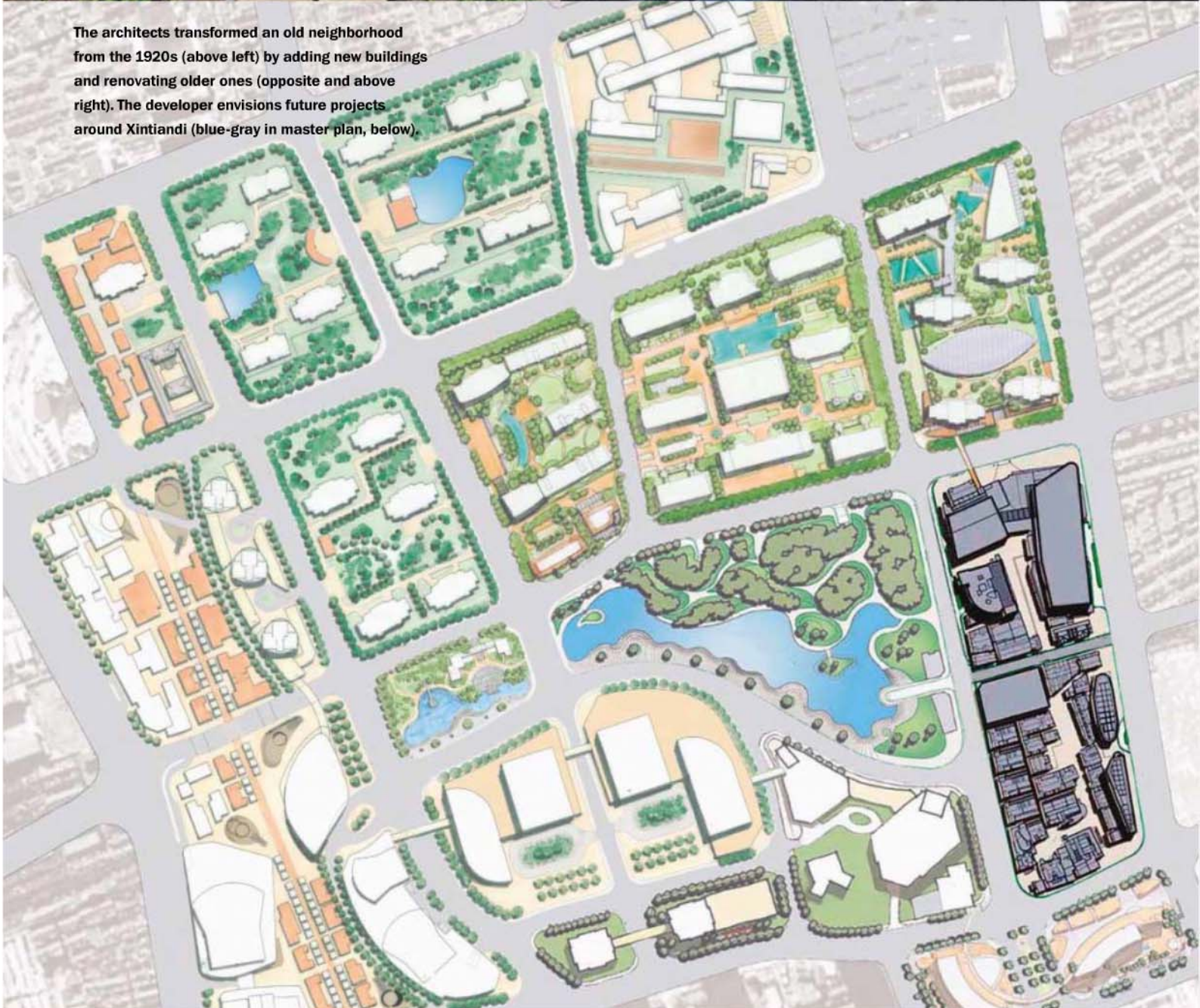
When Shui On started work on Xintiandi in 1998, the biggest challenge, says Wood, was convincing the skeptics—including investors, the government, and potential tenants—that such a place was marketable. An adaptive reuse project on this scale had never been attempted in Shanghai. The low floor-to-area ratio, in addition to the costliness of saving old struc-



Jen Lin-Liu is a Shanghai-based writer for The Chronicle of Higher Education and Newsweek International.



The architects transformed an old neighborhood from the 1920s (above left) by adding new buildings and renovating older ones (opposite and above right). The developer envisions future projects around Xintiandi (blue-gray in master plan, below).





The architects boldly juxtaposed new elements with old ones (above right and below left), while preserving old pathways (above left and below right) and more than 100 stone gates (opposite, top). Most interiors are new (opposite, bottom).





PHOTOGRAPHY: © LIU SHEN HUI (NIGHT SHOTS)

tures, meant that it would take a long time for investors to reap profits. Wood recalls critics—later proved wrong—who told him it was silly to incorporate sidewalk cafés, because “no Chinese person will sit outside.”

Critical to Xintiandi’s popularity is the connection it makes to the past, particularly the old *shikumen*, which are unique to Shanghai and blend Western and Chinese styles of architecture. Originally occupied by middle-class families, the structures were designed by British and French architects, who combined European elements such as slate-gray bricks and French windows with Chinese features like courtyards and stone gates.

Though most of the buildings were on the verge of collapse and had to be torn down, Wood + Zapata kept more than 100 stone gates in their original positions and incorporated them in storefronts. Like doctors giving patients a shot in the arm, construction workers injected concrete into the gates through small holes to make them stronger. Whenever possible, the architects reused the slate-gray bricks and stones from the old residences in erecting new buildings. Throughout the project, architectural historians and old craftsmen worked as consultants to ensure authenticity.

The architects also restored an old villa, which has become a private club where government officials have entertained dignitaries such as President Vladimir Putin of Russia. On the south end of the development site, the architects retained the Yi Da, the building where the Chinese Communist Party held its first national congress in 1921. Wood, though, did not approach Xintiandi as historic preservation. Instead, he saw it as an exercise in adaptive reuse, in which the buildings’ historic fabric would be used as one component in creating a new place with a new identity. “When I wanted a window somewhere, I put in a window,” he explains. One of the project’s most distinctive structures, a building that contains the popular restaurant Luna, features a dramatic floor-to-ceiling curved glass wall.

Xintiandi also connects to Shanghai’s urban fabric, something that the city’s new self-contained shopping malls usually ignore. Storefronts, not blank walls, face the street. A lake and park built next door by Shui On provides a setting for senior citizens to stretch and do *tai chi*. Chan estimates that about 70 to 80 percent of Xintiandi’s customers are Chinese, rather than international tourists or expats.

In a city where everything from Art Deco buildings to European-style row houses are being torn down on a daily basis to make way for high-rise developments, Xintiandi has shown that the city’s historic architecture can be a valuable commodity. Chan explains that by creating an innovative project, the developer has raised the property values of the surrounding area—land that Shui On is also developing.

Wood says he now gets about one phone call a week from mayors around China inviting him to build a Xintiandi in their city, too. He is collaborating with Shui On on one such project, called Xihutiandi, in Hangzhou. But Chan says that few cities in China have the combination of assets necessary to create a Xintiandi. “You need an international community, [high] incomes, and very open-minded people,” he explains. And having Shanghai’s unique architecture to start with wouldn’t hurt, either. ■

Project: Xintiandi, Shanghai

Client: Shui On Group

Architect: Wood + Zapata—Benjamin Wood, AIA, partner in charge

Associate architects: Nikken Sekkei; Tongji Design Institute; SOM (master plan)

Engineers: Maunsell (structural); Meinhardt (mechanical, electrical)

General contractors: Meida; Shanghai No. 1 Construction



2008 BEIJING OLYMPICS

Innovative architecture ready to change the face of an ancient city

By Sara Hart

Becoming a host city for the Olympics requires, well, Olympic effort. According to the International Olympic Committee, the host city must meet strict requirements for transportation, accommodations, communications, security, and facilities. It must accommodate an influx of millions of spectators and athletes for 17 days and provide interesting cultural diversions for television programming. Applicants spend years competing with other cities, and lobbying and self-promotion alone can cost many millions. And yet, for cities that go the distance, the payoff can be huge. The 1996 Olympic Games in Atlanta generated \$5.1 billion in economic impact, plus 80,000 new jobs. The New York Olympic committee, NYC2012, estimates that the New York-New Jersey region could expect tens of thousands of new jobs and a local economic impact approaching \$11 billion, if selected for the 2012 Games.

After being named host city for the 2008 Olympics in July 2001, Beijing got busy making big plans. The timing was perfect, because the 1,000-year-old city is enjoying an economic boom and needs to create a modern center. The Olympics offers an opportunity to draw development away from important historic areas, such as the Forbidden City, with a strategy to reinvigorate the central core of the city.

In one of its early planning moves, the Beijing Olympics committee awarded Sasaki Associates, based in Boston and San Francisco, the job of designing the 2,800-acre Olympic Green—the primary site of the games. Sasaki's strategy was to extend imperial Beijing's north-south axis and use it as the main organizing element for the sporting venues and landscape design. In addition to the main arenas, the Olympic Green will include the Olympic Village and cultural facilities. The goal is to create the framework for mixed-use development after the games.

The Olympic committee later awarded the international landscape design and urban planning firm EDAW the planning responsibility for a 748-acre aquatic park in the Shunyi District. The park will host canoe and kayak events during the games and contains two large waterways, viewing stands, athletes' facilities, and green spaces.

Apparently, the 2008 Olympics will be brought to you by ethyl-

Sasaki's master plan (this spread, top and bottom left) extends imperial Beijing's north-south axis from the Forbidden City through a new urban center. 1. Tiananmen Square. 2. the Forbidden City. 3. The Olympic Green. 4. EDAW master plan (detail, opposite, bottom far right) for the Aquatic Center.

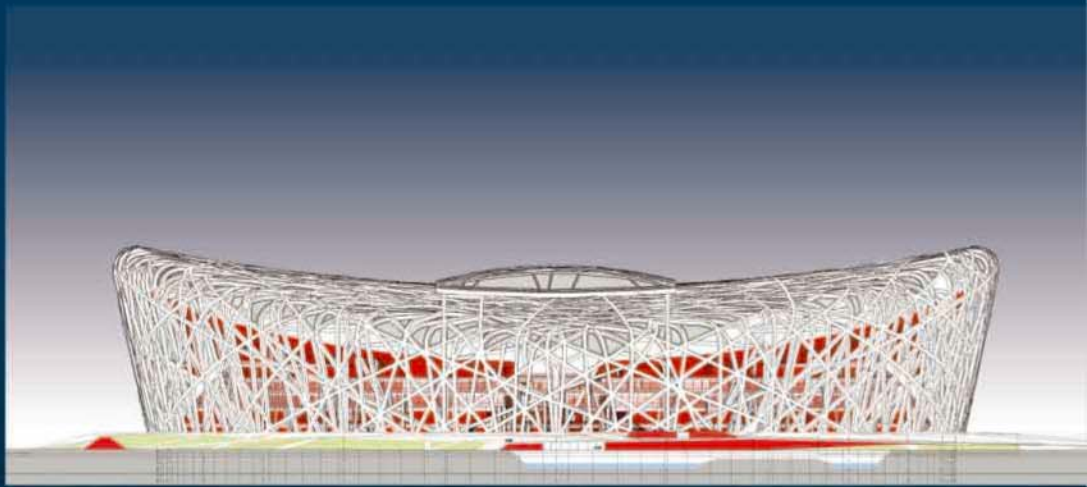
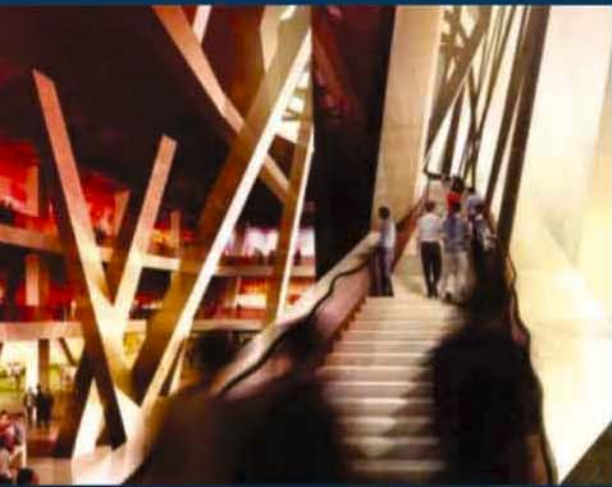






Water Cube

The structure adapted for the National Swimming Center now under construction is a simple steel space frame clad in sturdy ETFE pillows. The Sydney-headquartered architects PTW, along with Arup, designed the arena to be energy-efficient. Rainwater is collected and stored, and backwater is filtered and recycled.



National Stadium

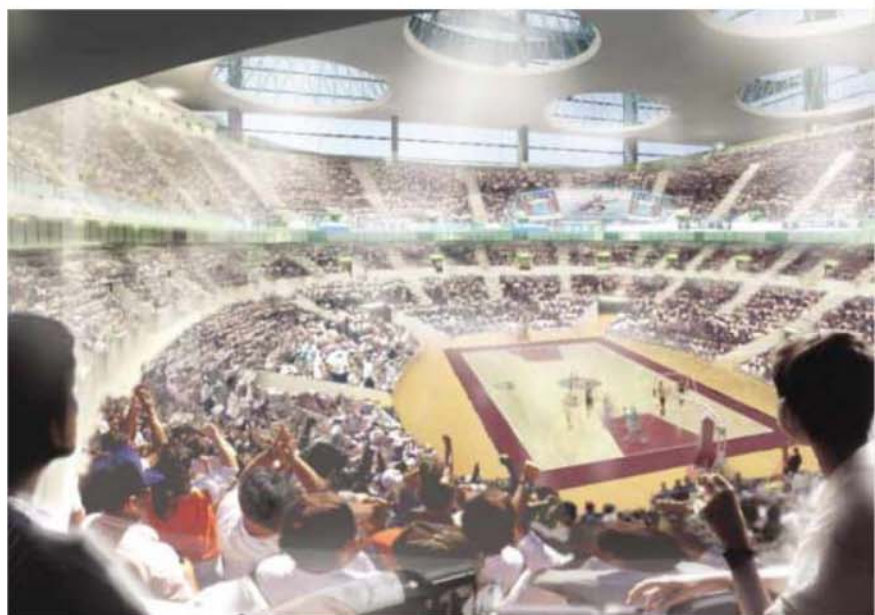
Herzog & de Meuron's arena will rest on an elevated area of the site. The lattice work is made of steel space frames clad in ETFE foil. Promenades run through and around sunken gardens, engraved stone carvings, and mineral hillsides.

RENDERINGS: COURTESY THE ARCHITECTS

ene tetrafluoroethylene (ETFE), a deceptively tough, high-performance foil that is popular with European designers. The Swiss firm Herzog & de Meuron has designed the National Stadium, which it conceived of as “a collective vessel for ‘the People’s Olympics.’” The “bird’s nest” form will be constructed of twisting space frames in which all of the elements support each other. The facades, stairs, and roof are all integrated into a single structural system. The nest is wrapped with two layers of ETFE foil: An outer layer forms the weatherproofing, while an inner layer forms an acoustic ceiling and gives the interior a smooth, consistent appearance.

Across the Olympic Green, a companion arena, the National Swimming Center, will emerge. It, too, has a nickname—the Water Cube—and will also be clad in ETFE pillows. Designed by Sydney-based architects PTW, with Arup Australasia, it will perform in the same way that a greenhouse does, by trapping solar energy and channeling it to heat the pools. The Wukesong Cultural and Sports Center, designed by the Swiss firm Burckhardt + Partner, will feature multimedia screens on the outside and hyperboloid light wells inside, serving as another example of this Olympics’ commitment to using architecture as a driving force. ■

A forest of giant hyperboloid, tensile light wells (opposite, top) supports the roof of the Wukesong Cultural and Sports Center, designed by Zurich-based Burckhardt + Partner (this spread). The facade (this page, top right) is made of large liquid crystal display screens, which display the events for visitors outside.





TIANTAI MUSEUM

Lu Wang creates a modern museum in tune with the local vernacular

By Wenjun Zhi

Since the Buddhist scholar Zhiyi taught there in the 6th century, Tiantai Mountain and its surrounding area have played a critical role in the development of Taoism and Confucianism in China. Located in Zhejiang Province, about 285 miles south of Shanghai, the area today draws visitors with its beautiful scenery and rich cultural history. The 55,000-square-foot Tiantai Museum, which opened last year, uses local history and civilization as a springboard, integrating the functions of exhibition, research, education, and leisure.

In designing the museum, Lu Wang searched for new expressions for Tiantai's vernacular architectural traditions. One of China's leading architects and a professor at Tsinghua University in Beijing, Wang understands that vernacular forms and spatial expressions grow naturally from an area's particular environment—its climate, culture, light, and available materials. But new functions and new ideas require correspondingly new forms and design strategies.

According to Wang, the architect's job is to establish the proper relationship between order, space, and function, while keeping man in harmony with nature. Ancient Buddhist temples in Tiantai offered good examples of how this balancing act could be done with skill. While learning from these traditional buildings, Wang didn't want to pursue a "Chinese national style" of architecture. Instead, he used traditional building technologies and forms—such as post-and-beam framing, courtyards, and covered walkways—to create a building that is modern in function and expression. Most important, thick stone walls defining the perimeter of the site echo the scale and massing of nearby Buddhist temples without referring to the upturned roofs of the old buildings. Inside, the museum unfolds as a series of halls exhibiting art, calligraphy, and historical and cultural artifacts from the area. Daylight slides into galleries and passageways mostly from above—through clerestory windows and skylights.

Caught between the pressures of globalization and the local people's love of their old architecture, Wang developed a design that is modern in its approach to structure and function, yet rooted in its particular place. His Tiantai Museum shows it is possible to shape a contemporary vernacular architecture. ■

Wenjun Zhi is the editor of Time + Architecture, a magazine published by the Tongji University College of Architecture and Urban Planning in Shanghai.

Project: Tiantai Museum, Tiantai, Zhejiang Province

Architect: Lu Wang with Lianna Jia and Long Chen

Associate architect: Zhe Jiang Jia Jing Planning Design Research Institute



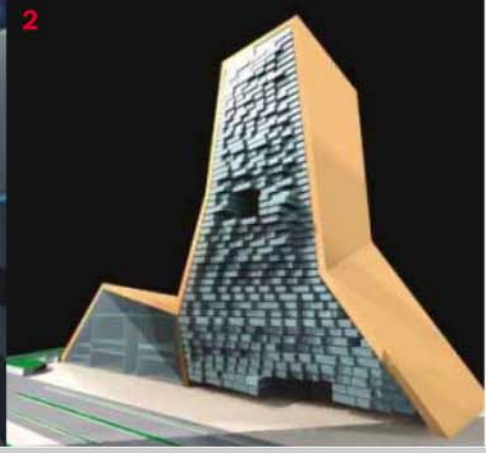
Sitting behind a thick stone wall, the museum echoes the massing of ancient Buddhist buildings in the area (rear in photo below) and uses vernacular forms such as courtyards and covered walkways (bottom left and opposite). Inside, most of the light comes from above (bottom right).





CCTV headquarters (1) will stand near OMA's TVCC building (2), both rising from an "animated" landscape (1, 3, 5). A rhomboid hollowed at its center, CCTV will have right angles only in its horizontal dimension. The structure will be revealed in an irregular, triangulated steel grid across its facades, varying with loads and programmatic needs (4).

2



CCTV HEADQUARTERS

Rem Koolhaas reimagines the skyscraper and a Chinese network in the process

By Sarah Amelar

With more than a billion viewers, CCTV is China's largest television broadcasting company. Though its current home is gated and strung with barbed wire, CCTV is poised to reinvent its public image—just in time to broadcast the Beijing Olympic games in 2008. Its new headquarters will cut an unmistakably acrobatic silhouette on the skyline. With no traditional bottom or top, no beginning or end, nor any skyward pinnacle, the building will form a huge, continuous loop, comprising 4.4 million square feet of floor area.

With this gravity-defying scheme, the Rotterdam-based Office of Metropolitan Architecture (OMA) beat out submissions from 10 international competitors, including Dominique Perrault, SOM, and KPF. Though OMA partner Rem Koolhaas has long expressed a fascination with tall buildings, this high-rise, soaring 760 feet, will be his first. Proposing a new species of megabuilding, it will bend sculpturally with one horizontal section and corner hovering 538 feet above the ground. But why pull off such an act of structural bravura? Why pretzel a tower into a twisted loop?

The iconic potential and massive visual impact of this form are obvious. But will it be more than an attention-grabber and CCTV image-maker? Ole Scheeren, who, along with Koolhaas, is an OMA partner in charge of the project, asserts that Beijing lacks a strong contemporary icon, identifying itself instead with the visually elusive Forbidden City. And, unlike Shanghai, China's capital has not experienced a skyscraper boom and transformation into a modern metropolis. Scheeren also cites the events of 9/11 for influencing OMA's development of a loop structure, with its inherent escape routes, as well as the firm's decision not to strive for the world's tallest tower. "Instead," he explains, "we took this opportunity to rethink the skyscraper—a form derived directly from the repetition of floor plates and exploitation of land for maximum profit." The architects set out to investigate the high-rise's capacity to engage space three dimensionally.

Here, on the four blocks of the 25-acre site of Beijing's future central business district, OMA had a chance to bring together a wide range of

broadcasting and administrative functions that would normally occupy a separate urban sector. A second OMA building on that site, the 1.25-million-square-foot Television Cultural Center (TVCC), will include exhibition spaces, plus a hotel, a visitors' center, and a theater. A media park will form an "animated" topography or landscape, incorporating entertainment venues, as well as outdoor filming and studio areas. Embracing the public as never before, CCTV will feature Universal Studio-type tours.

Projecting an image of an open and transparent company, CCTV's façades will combine extensive glazing with an irregular, triangulated steel grid, revealing the structural system. With frequent sandstorms blowing into the city, OMA considered only a strong-reading mesh and pronounced overall form capable of holding up against the visual imprecision of the "Beijing blur." Devised with Arup, the structural system must also enable the enormous aerialist configuration to withstand the real possibility of earthquakes.

OMA's two buildings will occupy and likely influence a context that does not yet exist. Once the district is full of skyscrapers, will CCTV stand uniquely amid a forest of more traditional and anonymous structures—or will it inspire a circus of competing architectural acrobatic acts? Will it be a truly significant breakthrough in the evolution of high-rises? Whatever the outcome, the scheme—passionately debated on the Internet—has already riveted public attention in China. ■

Project: CCTV Headquarters and TVCC Building, Beijing

Architect: OMA—Rem Koolhaas and Ole Scheeren, partners in charge; Shohei Shigematsu, Adrianne Fisher, Hiromasa Shirai, Anu Leinonen, Charles Berman, project team members; Qingyun Ma, special Shanghai-based adviser

Collaborator: East China Architecture & Design Institute (ECADI), Shanghai

Engineer: Arup—Cecil Balmond

RENDERINGS: COURTESY OMA

PROJECTS



Projects Taking Shape in China

1. Project: Beijing Books Building

Location: Beijing

Architect: Rem Koolhaas, Office of Metropolitan Architecture (OMA)

Program: The \$77 million project will be a phased redevelopment and enlargement of an existing bookstore in Beijing. The new building will be composed predominantly of reinforced concrete with a deep, glazed "bookshelf" facade. The store will also serve as a business center for publishing, film, television, Internet, and cultural exchange.

Schedule: Construction will begin near the end of 2004 and progress for 24 to 30 months.

2. Project: ZhongGuanCun West

Office Complex

Location: Beijing

Architect: Kohn Pedersen Fox Associates with China Architecture Design and Research Institute (CADRI).

Program: A 1-million-square-foot office complex that will include a 500-foot-tall office tower, an office podium, and an exhibition bridge structure. A series of curved planes and volumes are clad with glass and metal and are designed to unfold like the petals of a plant or the feathers of a bird. An important element of the Beijing Science and Technology Park.

Schedule: Project completion date December 2004.



More firms are entering the Chinese market each day. Their many designs will further transform the landscape of a country already changing beyond recognition. Below is a list of just a few of the projects being designed by foreign practices in China, often collaborating with local Chinese design institutes. The roster features some of the most prominent architects in the world.

Many designs will make you dizzy with their sheer size, in a land where bigger seems to be better. Others will amaze with their originality. Encouraged by their clients to express the notion of progress, many foreign firms are using China as a testing ground for new ideas in tech-

nology, engineering, and design.

"In the United States, we are quite constrained in what we can do," says Steve Weindel, a principal at Gensler. "In China, people are a lot more tolerant and expectant of innovative design and architecture that has an impact on its surroundings and its environment."

Some of the designs may never be built. This occurs regularly in a country where so much is happening so quickly. But those that do will likely take form quickly, with construction progressing under the hands of massive crews working at all hours of the day.

Like it or not, a new China is rising very fast. *Sam Lubell*



3



4

3. Project: Nanjing Jinling Hotel Phase II

Location: Nanjing

Architect: Skidmore, Owings & Merrill (San Francisco)

Program: 1,050 feet tall, the building is sited in the heart of Nanjing's commercial center. The building's skin forms a rigid, diagonal grid that functions like a twisting tube. The project will feature offices, apartments, and a luxury hotel.

Schedule: Construction set to begin in 2005, with completion in 2008.

4. Project: Looped Hybrid Housing

Location: Beijing

Architect: Steven Holl Architects

Program: Mixed-use building complex with more than 700 apartments sited adjacent to the old city wall of Beijing. Composed mainly of towers linked by a ring of cafés and services and meant to be a "city within a city." The 1.7-million-square-foot project will be able to support more than 2,500 occupants.

Schedule: Construction begins October 2004 and ends in 2006.

5. Project: Guangzhou Opera House

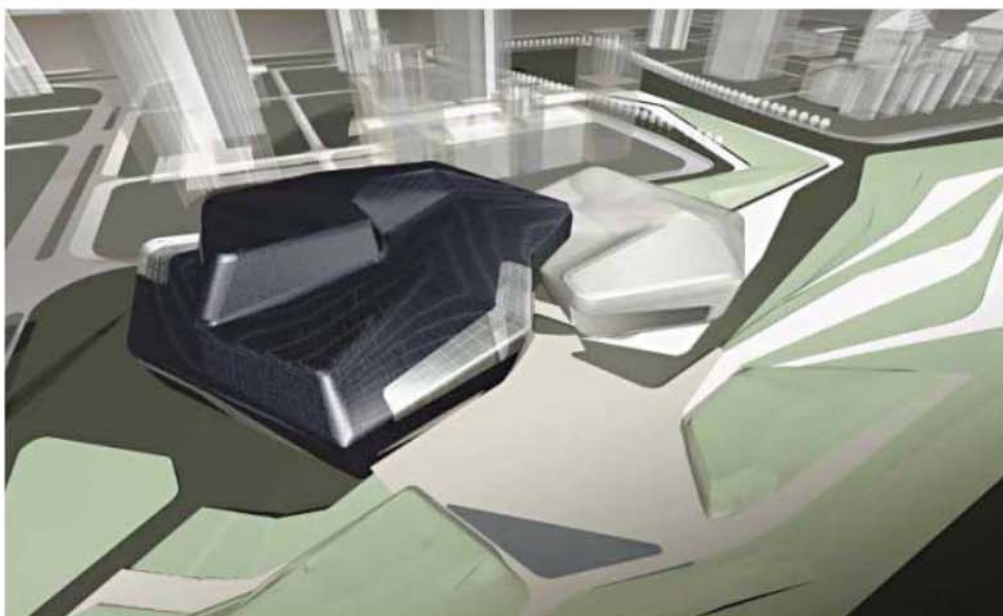
Location: Guangzhou

Architect: Zaha Hadid Architects

Program: A fluid, rigorously contoured design will provide open river access and create a new "dialogue" with the town. Standing at the foot of a major boulevard, the opera house is meant to furnish a focal point for civic and cultural buildings in the city.

Schedule: Not determined yet.

5



6. Project: *Boan Residential Development*

Location: Shenzhen

Architect: T.R. Hamzah & Yeang Architects

Program: 2.1-million-square-foot complex will include residential, retail, sports center, schools, plazas, an ecopark, and a central park. Apartment towers are located along the periphery, overlooking vehicle-free landscaping.

Schedule: Construction began January 2003.



7. Project: *Suzhou Museum*

Location: Suzhou

Architect: Pei Partnership with Suzhou Institute of Architectural Design

Program: A 1.6-million-square-foot museum of history. Located in the city's historic quarter, the concrete and glass-and-steel building is organized around a series of gardens and courts that mediate between the building and its surroundings.

Schedule: Construction set to begin summer 2004 and to finish in 2006.



8. Project: *Hangzhou Lakeshore Redevelopment*

Location: Hangzhou

Architect: Jerde Partnership with Zhejiang Building Design Research Institute

Program: A mixed-use district combining urban and natural components. One block is designed around a central canal that extends west into the city. The landscaped side of the canal contains a mixture of restaurants and cafés. The urban side, a three-block pedestrian street, contains retail, restaurants, and a cinema. The two sides are connected by a series of multilevel bridges.

Schedule: Projected opening is set for 2006.



IMAGES: COURTESY T.R. HAMZAH & YEANG ARCHITECTS (6); PEI PARTNERSHIP (7); JERDE PARTNERSHIP (8); BEHNISCH BEHNISCH & PARTNER (9); VON GERKAN, MARG AND PARTNER (10); GENSLE (11)



9

9. Project: Anting, New Town Residential Towers

Location: Anting

Architect: Behnisch, Behnisch & Partner

Program: Six floors of apartment units with an attic community room and terrace. An alternative to conventional mid-rise housing, the design has the look of full units stacked above each other in an uneven fashion.

Schedule: No timeline set.



10

10. Project: Shanghai-Pudong Museum (Archives and Exhibition Hall)

Location: Shanghai

Architect: von Gerkan, Marg and Partner Architects with Shanghai Institute of Architectural Design & Research (SIADR)

Program: The building will contain historic archives and document Pudong's history with ongoing exhibitions. The 441,000-square-foot space is lifted above the street on a "pedestal," stressing its importance. The clear cube has a semitransparent glass exterior on which movies and text will be projected via projectors mounted in wall recesses.

Schedule: Construction period set for 2003 through 2004.



11



11. Project: Lujiazui Financial Center

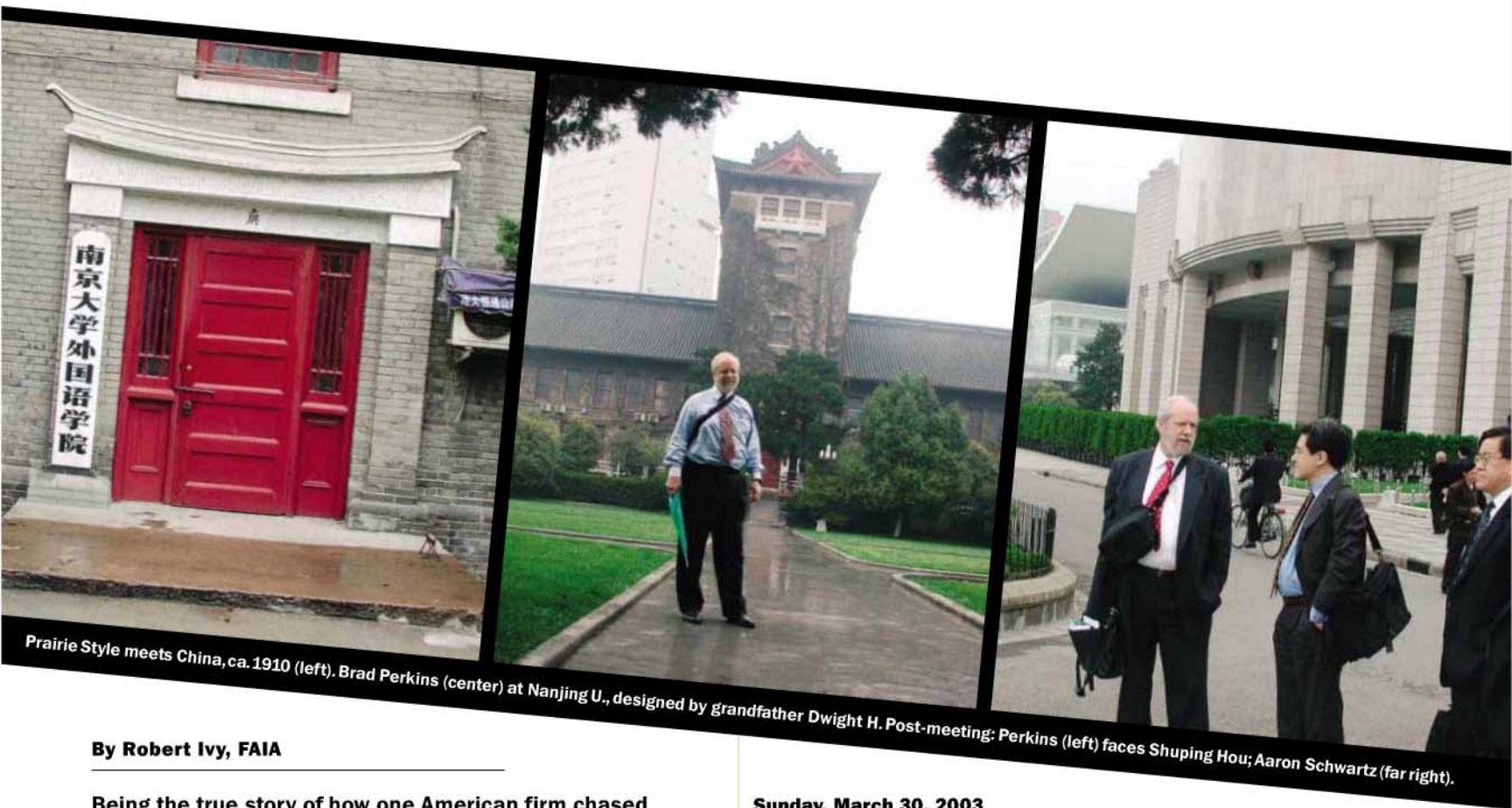
Location: Shanghai

Architect: Gensler

Program: An 800,000-square-foot, 246-foot-high office building with a transparent, double-skin exterior. The office space is organized in two wings around a central atrium. Transparent "wrapper" creates a clear cube that will be a distinct landmark along the city's river.

Schedule: Not determined yet.

From the Field: China Business Blitz



Prairie Style meets China, ca. 1910 (left). Brad Perkins (center) at Nanjing U., designed by grandfather Dwight H. Post-meeting: Perkins (left) faces Shuping Hou; Aaron Schwartz (far right).

By Robert Ivy, FAIA

Being the true story of how one American firm chased architectural commissions across eastern China and found a veritable pot of gold. Not without years of round-robin trips across the Pacific, 16-hour days, or jet lag.

For a new generation of American architects, stymied by the vagaries of the domestic economy, China represents potential salvation—a constantly expanding marketplace that welcomes their expertise, with projects challenging conventional experience and scale. The overall market is enormous: Consider that in 2003, China leaped from fourth to third place among construction economies, leading hungry architects to yearn for room at the Chinese banquet.

While most firms can only dream of Xanadu, the mythical realm established by Kublai Khan, *ARCHITECTURAL RECORD* determined to take you to this modern-day end of the rainbow—today's robust, challenging China. In April 2003, I accompanied one of the most successful architectural firms in acquiring Chinese work, Perkins Eastman Architects, a 400 person company headquartered in New York City, on a typical business trip to China.

For eight days, I tagged along as firm chairman Bradford Perkins, FAIA, who, in a 30-year career, has engaged clients throughout the world, made the rounds of clients in Nanjing, Shanghai, and Beijing. An abbreviated diary, full of sights and sounds along the way, together with abbreviated records of the Perkins team's extensive business dealings, follows.

Sunday, March 30, 2003

**Day One
Shanghai**

Wearing nonsensical-looking blue masks to avoid the plague of SARS, currently terrifying southeastern China 500 miles away, we land. Our flight arrives at night from Tokyo into Shanghai's sleek, new, French-designed Pudong Airport. Met by Brad Perkins and Shuping Hou (in China, name order reverses our own, but we are following the Western convention in this issue, and so does Brad, who calls his trusted friend and business associate "Shuping"), who has arranged transfer to a contemporary hotel downtown. Along the way, I jettison the mask and confront a cacophony of neon lights, bulbous or spiky towers, and musical sounds. Jet lag encourages dreamlike arrival, prompting speculation: Is this the end of the rainbow?

**Day Two
Nanjing**

No time to yawn. Up before dawn to catch an early train to Nanjing, joined by Perkins Eastman senior principal Aaron Schwartz and Shuping. Shanghai station is mobbed by early risers, who mill about, coughing and hacking in the morning mist. Brad and Shuping lead the way to the "soft" lounge (which refers to upholstered furniture) prior to departure. The train ride takes us through an intensely farmed landscape dotted with fish farms and lush garden plots. We arrive several hours later at Nanjing, a bustling city that at one time housed China's capital, now moderately sized for China (just 5.3 million) and laden with foggy, polluted air.

On arrival, a taxi (with a female driver) squawking loud music

takes us to a Holiday Inn-like structure housing the client—the Center for Chinese and American Studies jointly sponsored by Johns Hopkins and Nanjing Universities. Inside, Chinese and Americans (including an associated firm with strong China experience, HLW) take seats at a long table—a typical scenario. An energetic young American director of the center in Nanjing, Robert Daly, conducts the discussion in Mandarin Chinese for his university associates. The director of planning and project management from Hopkins stateside has flown in for the meeting. I wonder how Daly acquired such proficiency in the difficult language and how he keeps up the pace of translation, as Aaron makes a detailed presentation of four schemes

Day Three

Shanghai

Rather than slow down, the pace accelerates. On Monday, we have been granted an audience with a rainmaker, the vice chairman of the Shanghai Municipal People's Government, Jian Zhi Huang. This highly placed official, whose oversight includes the municipality's construction and planning management, greets us with a quiet welcome and endless cups of tea, surrounded by two fellow government employees in a centrally located conference room. Huang exudes a controlled confidence, not of the bristling American boardroom type, but suggesting an inner assurance. As the group leans forward in deference and expectation, he describes his city's comprehensive plans for the future, stressing that



Shanghai model (top); Diana Sung (center in photo, bottom left). At Summer Palace, Beijing (center). Maxdo Plaza client, Kin-Kwok Chung, surrounded by associates (right).

in development. With curtains closed, the group drones on about a range of topics: taxes, costs, detailed plans for the new facility. Omitting the bilingual ping-pong, this universal architectural ritual could be taking place in Milwaukee or Moscow. Like any client anywhere, Johns Hopkins needs to get the most for its budget.

Sandwiches(!) arrive in paper bags for lunch, after which Brad and I escape into a gentle spring rain. Soaking in the sweet, pungent odors and birdsong, we walk past kids in jogging suits and khakis, reaching the quiet, green heart of the campus—the Prairie-Style-with-a twist quad of Nanjing University, which had been designed by Chicagoan Dwight H. Perkins, Brad's famous architect grandfather (progenitor of another major architectural power and friendly rival, Perkins & Will) in 1910. This early, felicitous introduction to Asia continues to open doors for both firms. Vital connections continue to the present; Perkins's brother, director of the Asia Center at Harvard, is considered one of the top China scholars in the U.S. Few other architects could count such an established heritage as entrée to today's Chinese marketplace—still he works at it.

Sated by a full afternoon of poring over policy and dollars and international law, we snag a train for Shanghai as darkness falls. After drinks and dinner, I drop into bed—alone, frayed, realizing that this trip has just begun.

Shanghai will grow far beyond the immediate developments needed for the forthcoming Expo in 2010. The scale he confronts sounds daunting: In this metropolis of 4,000 skyscrapers, another 2,000 are planned, yet he never blinks. We will deal with them, he states. He emphasizes that, while most residents currently live within its bounds, the city's future lies outside its current ring road, requiring a massive population relocation to smaller new urban centers nearby. Throughout this explanation, his body language remains relaxed, confident, at odds with the scale of the upheavals ahead. Huang's self-assurance would find echoes in other boardrooms across the country, in a generation of highly educated young leadership, apparently aware of their personal and collective roles in history. They know that China is on a roll.

On the sidewalk outside the building after the meeting, the Perkins group exults in the positive encounter, certain that it will yield later work: The meeting, apparently, had been a coup. We shake off the energy by ambling for a bit. After a brief walk along Nanjing Lu, the primary shopping street, we drop in at the Peace Hotel, an Art Deco landmark on the Bund, for lunch. From the table, laden with local delights such as crystal shrimp and fresh baby eels, we can see the ships plying the Huang Pu River, apparently headed directly into the riverbank

before turning—a dramatic setting analogous to the colonic bend of the Mississippi River at New Orleans, here populated by an unending succession of ships, barges, and funky small craft.

A taxicab takes us to another long table in another tall building, courting the Maxdo Plaza project, where we are joined by the recently arrived Diana Sung, AIA, another Perkins architect and firm principal. Diana has arranged the delivery of reams of presentation work, consigned electronically to local printing sources within China. (Why cart all that heavy matter across the Pacific?)

The Maxdo project did not drop from the heavens, nor arrive by unsolicited RFP. Five years earlier, Perkins had met and struck up a relationship with this client, whose ambitious project of 4 million square feet would become the largest mixed-use premium development in Shanghai. Perkins has worked to gain the client's trust and friendship, returning repeatedly himself and forging strong ties with the chairman. Perkins knows that, if the project proceeds, the time invested will be worthwhile.

The 10-acre location, currently inhabited by the ordered pandemonium of a marketplace sporting silk neckties and live chickens, comprises one of the largest undeveloped plots in the former French Concession. Properly analyzed and constructed, the project would be massive, with four towers housing residences, offices, a hotel—all rising

from Canada. For this meeting, he's in the room. Conversations surrounding the final contract negotiations ultimately occupy two full days of our journey, locked in a conference room with tea and talk. But Maxdo may yield immense, meaningful work for the firm, with the potential for years of employment.

Throughout the meeting, all eyes focus on the power, centered on Maxdo chairman Kin-Kwok Chung, a well-tailored, robust-looking younger man. Such energy, such concentration, for hours on end, as he and his associates pore over the contract documents, a situation abetted by his own development project manager, Tom Marquis, formerly with the John Portman operations in China. After a day's discussion, the group leaves the total contract amount blank with plans to negotiate the total remuneration separately. According to Perkins, the contract, which has several phases, "will probably exceed \$12 million" in revenues for Perkins Eastman. From just one client, with other clients to follow.

As the conversations wind down, the group breaks for dinner, which takes place in a private dining room nearby. Suddenly the mood shifts from negotiation to socializing in a space where all is ormolu and black lacquer. With a kick-off from Chung, toasts follow, eased by conversation and courses reached from the lazy susan, which is constantly



International face-off: Shanghai official Jian Zhi Huang and Perkins delegation (left). Sung (above left) and clients taking a breather at the Summer Palace.

above a shopping and entertainment venue. Serious business, with a large payout, the arrangements for planning Maxdo will be complex, involving two distinct contracts for the Perkins group—one for development management (which lies outside the bounds of traditional A/E offerings, including oversight of feasibility and marketing studies, budgeting, scheduling, construction strategies, and financial modeling), and one for the more familiar architectural services.

Critical to the Perkins execution will be the relocation of a Perkins-employed property development expert, Briane Randall, with heavy experience in the Asian markets, who is moving to mainland China

stocked with jellyfish and mushrooms in abalone sauce at the hands of a multitude of silk-clad hostesses, who silently sweep the table clean. Throughout the evening, the group spontaneously erupts in laughter, yet, as in the boardroom, the gravity and the power emanate from the client, Chairman Chung. After the last toasts, we retire to the hotel, to rest before another day of negotiations.

In certain stolen moments on the Shanghai trip, during meetings and long dinners, Brad has broken away from the group for mobile-phone calls. I missed most of these. Later he informs me that he has been in contact with a potential client for the Shanghai International Medical Zone. This huge 4.4-square-mile site will include, among other things, two 500-bed teaching hospitals and a new

campus for a medical school. In this land of beyond-plenty, more courses remain.

Day Four Shanghai

Back to the Maxdo client's offices for further negotiations. Today, the American group meets the market research consultants, FPD Savills—originally a British firm—for the first time. Tensions mount, as the professional groups posture for turf among themselves, trading factoids and questions, such as, “Why didn’t the ‘superbrand’ mall work well economically?” (Answer: They went ahead with “no solid market data.”) Throughout the exchanges, however, Perkins remains unflappable. For five years, he has been laying the groundwork for this moment, and no unnecessary emotion will cloud the accomplishment. His own background includes real property development. But his firm cannot do it all: Perkins Eastman will serve as executive architect and design architect for the overall master plan, housing, and offices, with a local design institute



Dinnertime (left). Lu Wang of World Architecture and I trade issues (top right). Shuping (standing left, above) translates.

as the architect of record. A specialist firm will handle retail and the hotel. There is room.

In the car, headed from the hotel to the airport (one of three automobiles required for the exchange—two for people and one for luggage), Brad waxes philosophical. China has changed and is growing up. Getting paid, which had seemed so difficult in earlier years, has receded as a problem, if architects take time to carefully screen their potential clients. Instead, today he cites staying power. “It takes endurance to succeed in this work,” he says without a bobble, a euphemism if I’ve ever heard one, as the plane lifts off (Air China/tourist class) for Beijing.

Day Five Beijing

Below us at the Kerry Centre hotel and office complex, the capital heaves

Chasing the Work: Who Else Is In On the Act

Thanks to a red-hot economy and a massive appetite for construction, China—only a minor target for architects just 10 years ago—has become a critical architectural workplace. So many firms have made their way to the Chinese mainland that the country has become a virtual who’s who of architecture, particularly in Beijing and Shanghai.

Firms with a presence in China include the Office of Metropolitan Architecture, Foster and Partners, Pei Partnership, Steven Holl Architects, HLW, Kohn Pedersen Fox, Perkins & Will, Gensler, and RTKL, to name only a few.

“It’s sort of an architect’s dream,” says Steve Weindel, a principal at Gensler, a firm that has designed more than 80 million square feet of projects in China (although only a small fraction will get built). “They’re building projects as fast as they can. In the past 30

or 40 years, they didn’t build much. Now, capitalism has taken on a frenetic pace. The need for new buildings is busting out of the seams.”

Echoes Paul Jacob, chairman of RTKL, “If you look at the demographics, everything points to China.” Jacob’s firm has completed around a dozen projects in China and plans to shoot for 10 building designs and 10 planning projects a year, he says. After having registered as a WFOE (Wholly Foreign Owned Enterprise) late in 2003, allowing for increased presence in China, the firm is planning to expand its Shanghai office by 20

people in 2004.

Rapid firm expansion like this seems to be the name of the game. Only a few firms, like Perkins & Will, which has been in China for more than 20 years and has offices in Beijing and Shanghai, are really established. The rest are setting up shop as quickly as they can.

Richard Nemeth, an associate at Kohn Pedersen Fox, designers of the upcoming 95-story China World Financial Center in Shanghai, says work in the country makes up 15 to 20 percent of his firm’s total projects. The firm started building in the country only eight years ago. Now KPF has representatives in Hong Kong and Shanghai, and others visiting China every other week.

While Nemeth’s colleagues spend more time in Shanghai, Nemeth adds that the capital, Beijing, has become a status symbol for architects around the world, particularly because it will be placed on the world stage during the 2008 Olympics.

“If you’re anybody in architecture, you want to be building in Beijing,” he says. “It’s going to be a treasure trove of great architecture.”

Outside the plethora of projects, another reason so many architects are going to China is the relative freedom bestowed on them.

“The client base is not locked into formulas as in the U.S.,” says RTKL’s Jacob, who notes that his firm is encouraged to try new ideas rather than rehash old, successful ones. Jacob adds that working in China allows his firm to break from being pigeonholed into certain building types: Although not thought of as a museum designer in the rest of the world, the firm is building the Shanghai Science and Technology Museum and the China Museum of Film in Beijing. *Sam Lubell*

power, oozes growth, emitting an aphrodisiac scent (ginger? garlic?). The first morning, Perkins Eastman meets another key client, Jiang Biao, who happens to have been trained as a nuclear physicist and now functions as president of a development group whose primary shareholder is the Chinese Academy of Sciences. Youthful in appearance, he must be older and more experienced than he looks. For this client, Brad has brought a gift—prized golf gloves. Surrounded by equally postadolescent-looking bright youths, who jump up from their seats and discuss developments in a lively exchange around the table, president Biao's group debates the fine points surrounding the construction of 4,600 housing units, among other projects. Even after careful explanations, the actual composition of all their work escapes me: What is actually in planning and what lies



Maxdo Plaza (top left), with upscale retail entertainment, hotel, offices, and 800 housing units. Johns Hopkins U./Nanjing U. Center (top right). Master plan, Jinan South City (bottom).

ahead are merging into information overload. How do the architects keep the dynamic components clear in their own minds? The facts become as hazy as the cigarette smoke that fills the room.

I do, however, understand the housing development in question. Four documents lay out the architects' schematic intentions, including 15 key questions for clarification. In addition to housing, the client lays out its plans for other projects, including one called "Cyber Garden," consisting of offices and a hotel. At a break during another luncheon (Szechuan food, more intensely flavorful than any offered in the United States, to my taste), one of the Chinese captures the rapid evolution under way when he says, chopsticks pointed aloft, that "one-third of Beijing is under construction." From the tenor of this meeting, a significant percentage is being planned in one room.

After a segue to meet a fellow editor at Beijing's Tsinghua University, I rejoin the contingent for the long march home through Beijing's rigorous traffic. That night, Brad and (continued on page 120)

Brad Perkins's 10 Tips for China

Brad Perkins, FAIA, a sometimes contributor to this magazine, has written suggestions for other architects interested in working in China. If you've thought about offering your architectural services in China, he suggests that most large firms have already entered the market. Firm size matters, he thinks, because "projects are often very large and the schedules are very demanding." Obviously, all those trips, and the consequent reworking sometimes required, could strain a small firm's resources.

He suggests that reputation does matter to the Chinese client, particularly an "established international reputation." Even so, the firm principal, with his or her name on the door, needs to show up. The Chinese, as a culture, "respect gray hair."

Specialized abilities in particular building types count, particularly for projects the Chinese have not yet developed expertise in. If engineering is any model, however, they will soon master most types of architectural projects, much as they can analyze and construct most engineering projects.

And a connection to, or an affinity for, China helps. Since you will spend days and weeks abroad, you should be able to treat a portion of your time as working vacation, absorbing "food, culture, and people." If you're too rigid to let go, don't.

1. Get an adviser. Someone who speaks Mandarin, capable of sorting through the opportunities.
2. Study the history, culture, and current business practices in China. The Chinese like

people who know about and appreciate them.

3. Organize to free up senior resources. Sending junior members will not get the job done, or get the job.

4. Organize to do competitions. Many of the larger projects are now awarded by competition, the "better of which offer some compensation."

5. Learn what to avoid. That means which clients, and certain types of jobs, to sidestep.

6. Create the technology infrastructure. Working overseas probably means coordinating work between the United States and China, with strong, sophisticated technology underpinning the effort.

7. Get to know the good resources available in China. Renderings, models, printing, and certain production tasks are cheaper there and are of excellent quality.

8. Have something good to sell. Although stymied by the effects of the Cultural Revolution, the country is progressing rapidly. However, they need "real expertise and look to North America" for help.

9. Learn some Mandarin and obtain Chinese language capabilities. Clients speak little English, although the rate of English-speaking is increasing dramatically. Even a few phrases from the consulting team is helpful.

10. Spend time there and make personal connections. Nothing substitutes for the personal relationships that can only be forged by multiple visits, "many banquets, and time."

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DBF18 - Spot Grazer



DBF19 - Horizontal Grazer

Shuping leave the group and fly to Jinan, where they meet another client. Diana Sung continues with the Science City group to an evening *son et lumière* at the Great Wall, miles away. I pass, retreating to the Kerry Centre room for a solitary dinner and sleep.

Day Six

Beijing

Brad and Shuping are visiting with a client in Jinan. Diana and the Science City client return to Beijing from the Great Wall. I join them via taxi for a full day's visit to the Summer Palace, featuring an extensive 18th-century pleasure garden that rivals Versailles—with a river diverted for the emperor's pleasure laced with lake and hillside pavilions. The team reunites that evening, after a full day's touring and client interactions, over late drinks at the hotel. Apparently the trip to Jinan paid off.

Day Seven

Beijing

Perkins and entourage meet with the Science City people, with a brief side trip for shopping at the fabled Pearl Market, where odors of fresh carp and abalone waft upstairs, kissing the knockoff Guccis and freshwater pearls as Margaret Thatcher smiles from a poster.

Day Eight

Beijing

Early that morning, I lift off for Tokyo once again, blue mask affixed, leaving the Perkins Eastman team still in place. Once aboard, I collapse into the seating, dumbfounded at the pace—a rotation repeated monthly. This trip actually was a light one for the architectural team: On Perkins's first trip of the year, he hit 7 cities in 18 days. From 30,000 feet above Beijing's

lowering gray clouds, I recollect the events of my own sojourn—still slightly lagged, confounded by constant transfers and language difficulties, and wondering, after experiencing events firsthand, how he does it. If the scope of Maxdo is any indication, the implications may be worth the effort. Yet, though the stimulation and the work can prove heady, China is not for the faint at heart.

One Year Later

After all of the Perkins efforts, what happened over the course of the year?

- The Johns Hopkins/Nanjing University job is under way for the Center for Chinese and American Studies, with ground breaking in mid-2004. However, who could have predicted a plague? SARS moved north, ultimately forcing the group to ship its planning to Hawaii.
- Many of Perkins's own expectations centered on Shanghai and the Maxdo Plaza project. Two residential towers (out of four towers total) should be under construction by fall 2004, following approval by the City of Shanghai. In addition, schematic design should be approved by April, with a target for the entire megacomplex (at 4 million square feet) set for 2009, in time for the upcoming World Expo in 2010, a critical date for Shanghai. Client-tending paid off.
- The Cyber Garden, Beijing, has progressed, but with expensive road-blocks. Brad Perkins relates that after design approval of this 'small,' 1-million-square-foot complex, "the program changed, and we also found that the local institute's zoning analysis was completely wrong. We were given six weeks to completely redesign the project." A costly oversight.
- A single client took Perkins and Shuping to Jinan, where they discussed plans for an entire new city. In China, apparently, they make no small plans. And still he flies off, for more, and more. ■

Record Interiors 2004

ARCHITECTURAL RECORD CALL FOR ENTRIES

The editors of ARCHITECTURAL RECORD announce the RECORD INTERIORS awards program. Entry is open to any registered architect. Of particular interest are projects that incorporate innovation in program, building technology, form, and use of materials. The fee is \$50 per entry; please make checks payable to ARCHITECTURAL RECORD. Submissions must also include plan(s), photographs (prints or large format transparencies—no slides please), and a brief project description bound firmly in an 8 1/2-by-11-inch folder—postmarked no later than April 30, 2004. Anonymity is not necessary. Winning entries will be featured in RECORD INTERIORS 2004. Other submissions will be returned or scheduled for a future issue. Please include a self-addressed envelope with the appropriate postage, and allow 10 weeks for return.

Submissions should be mailed to:

Sarah Amelar • RECORD INTERIORS • ARCHITECTURAL RECORD
Two Penn Plaza • Ninth Floor • New York, NY 10121

This form must be included in your submission. If you have any questions, please E-mail Sarah Amelar at sarah_amelar@mcgraw-hill.com

Name of firm: _____

Address: _____

Phone: _____

Fax: _____

E-mail: _____

Contact person: _____

Name of project: _____

Location of project: _____

If previously (or scheduled to be) published, please state magazine and publication date: _____

Agreement: We will not offer this project for consideration by another national design magazine during the 10-week review period at ARCHITECTURAL RECORD.

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Date: _____ Print name: _____

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K-12 SCHOOLS

Environment counts

THROUGH DESIGN, ARCHITECTS MAKE THE PUBLIC AWARE OF THE VALUE OF BUILDINGS IN THE IMPORTANT ARENA OF CHILDREN'S EDUCATION.



1.

San Francisco, California

A technical and fine arts school augments student activity with transparent outdoor/indoor work spaces and circulation areas.



2.

New York City

A streetside glass facade with a tranquil interior courtyard graces the elegant new home of a prestigious private school.



3.

San Jose, California

Urban schools can invigorate faded areas, as is the case with this facility, which straddles a residential neighborhood and a commercial district.



4.

New Hope, Pennsylvania

An L-shaped, barnlike volume provides a welcome home for the science labs and classrooms of this small, private country campus.

By Jane F. Kolleeny

When school bond referendums hit the local news, heads turn. The community must reach deep into its pockets to fund construction, while every parent with a child in tow feels like a client. Increasingly, all residents feel they should have a say, as neighborhood resource centers inhabit school buildings and community members participate in facility planning. Architects are challenged to mediate among the constituencies, including teachers, school boards, and governing groups, molding many points of view into coherent design work, which, considering what is at risk, should be superb.

The stakes are high. Schools represent one of the American government's largest budget items: Annual new K-12 construction came in at \$28.6 billion nationwide in 2003, excluding renovation. Bob Murray, vice president for economic affairs at McGraw-Hill Construction, tells us enrollments are up: "From 1995 through 2001, K-12 student enrollments grew by 6 percent in the U.S., led by an 11 percent surge in the West. Other major regions showed less growth—7 percent in the South, 5 percent in the Northeast, and 2 percent in the Midwest."

With taxes and enrollments increasing and politicians pontificating about the importance of education in this election year, positive action would seem guaranteed. Alas, the inequities among school districts makes disparity inevitable: Abundant funding in wealthy areas contrasts with overcrowded, derelict facilities in poor districts. According to the National Center for Education Statistics, in 2000 one in four schools reported at least one building in less than adequate condition. Urban schools tell a wearier tale: Disinvestment increases and living conditions worsen, even as the cost to restore aged buildings escalates. "The 'No Child Left Behind' Law left many children behind. The federal government mandated change, then did nothing significant to help the states fund it," says Todd Lee of TLR Architecture in Boston, who does considerable K-12 public work.

RECORD editors reviewed dozens of portfolios and came away with the feeling that today, quality design of public schools is, with a few shining exceptions, difficult to achieve. Consequently, three private schools and one public school fill these pages. While we remain committed to encouraging excellence in public schools, an extraordinarily important building type, we recognize good work, whatever its source. What can be done about these concerns? The American Architectural Foundation, a nonprofit organization that seeks to inform the public on the value of architecture, has rolled out a school design initiative to promote the role of architecture in the field of K-12. Their efforts will be documented in future issues of this magazine. ■

Lick-Wilmerding High School San Francisco

1

IN ONE STROKE, PFAU ARCHITECTURE SAVES A PRECIOUS VIEW AND PRESERVES THE MAIN GREEN IN THIS INVENTIVE URBAN CAMPUS SOLUTION.

By Lisa Findley

Architect: Pfau Architecture—Peter Pfau, AIA, principal; Dwight Long, principal in charge; Chris Tymoff, Mallory Shure, project managers; Caroline Cassavoy, Peter Cornell, job captains

Client: Lick-Wilmerding High School

Engineers: Tipping Mar and Associates (structural); Guttman & Blaevoet (mechanical); O'Mahony & Myer (electrical); Sandis Humber Jones (civil)

Consultants: Conger Moss Guillard (landscape); Revolver Design (lighting); RLS (acoustic)

General contractor: Plant Construction

Size: 26,000 square feet

Cost: \$11.5 million

Sources

Curtain wall: Walters & Wolf

Cement siding: Eternit

Aluminum louvers: Ruskin

Roofing: Hydrotech Garden Roof System

Steel windows: Hopes

Doors: Kawneer; Door Components; Appalachian Door; Eliason; Raynor

Cabinets and woodwork: Hellikson Design & Manufacturing; Tamalpais Commercial Cabinetry

Paint: ICI

Flooring: Forbo Marmoleum Tile

Tables/chairs: Leland International

For more information on this project, go to Projects at www.architecturalrecord.com.

When industrial arts education boomed in the late 19th century, outgrowing the capacity of the apprenticeship system, private technical schools filled the gap. Today's Lick-Wilmerding High School is the result of the merging and radical evolution of three such schools. With its motto "Education of the Head, Hands, and Heart," the unique school integrates technical and fine arts with rigorous college preparation for its 380 students.

Program

By the late 1990s, Lick-Wilmerding faced a complex problem. It desperately needed 19,000 square feet of new studio facilities, as well as an enlarged theater and cafeteria. Its mostly outdated 1950s campus on the semiurban southern edge of San Francisco sits on a sloping site, bounded by private land to the west, city streets to the north and south, and the commuter-packed 280 freeway on the east. However, a large grade change allows restful views over the freeway to the hills beyond. As a result, the campus had developed over the years into a horseshoe of buildings, with its open end toward the view and its center occupied by a usually soggy lawn thought of as the heart of campus. Given the attachment to the lawn,

Lisa Findley practices architecture in Oakland and teaches at the California College of Arts and Crafts.



there was only one logical place to build additional facilities: two stories over the faculty parking lot on the freeway side, thereby closing off the end of the horseshoe. With this solution as a master plan, the school resigned itself to losing the treasured view and began a competition for the new building.

Among the five short-listed competitors was Pfau Architecture of San Francisco. Known for its fresh viewpoint, the firm proposed an eye-opening solution that allowed the school to have both the large open public space and the view. It was, according to associate school head Ann Maisel, "a radical departure from the master plan that both could be executed and captured the imagination of everyone involved. We had to go with them."

Solution

Taking advantage of the sloped site,

Wooden louvers modulate light into the new cafeteria, which overlooks the public spaces and work yard. Bridges of metal grating cross over the work yard (above and opposite).

Pfau Architecture excavated the new studios and an outdoor work yard into the quad space. The studio rooftops, at the level of the old lawn, are covered by well-drained lawns and paving, connected by metal grating bridges, and overlook the studio work yard below. Named evocatively The Hill, The Beach, The Sculpture Terrace, these new scaled-down public spaces have the intimacy teenagers enjoy. To maintain see-and-be-seen campus life, views are preserved with open steel-mesh guardrails. The new high-ceilinged cafeteria, its glass wall modulated by wooden louvers, overlooks the public spaces and work yard, spilling out on one side to an outdoor eating





Daylight streams into the spacious, well-equipped studios (opposite, bottom), while a glassy world of activity remains visible from a

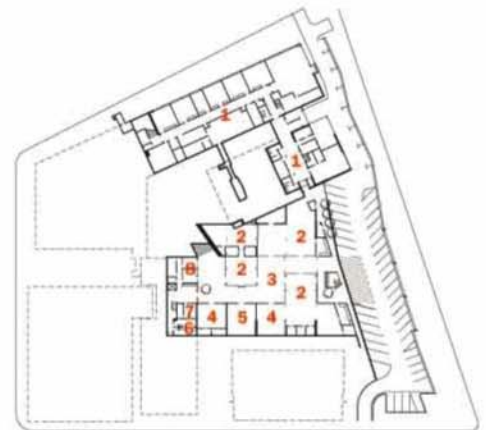
wide range of places on campus (opposite, top). By digging the building in and creating the work yard as an outdoor room, the project

becomes a series of connections. The spaces in between the programmed areas (above) are as important as the destination rooms.

1. Existing classroom building
2. Shops
3. Work yard
4. Labs
5. Physics
6. Bathrooms
7. IT office
8. Conference rooms
9. Main entry
10. Existing gym
11. Renovated theater
12. Dining terrace
13. Dining
14. Music
15. Paver walkway
16. "The Hill"
17. Existing library
18. "The Beach"
19. "The Sculpture Terrace"
20. "The Field"



MAIN LEVEL



LOWER LEVEL

N 0 50 FT.
15 M.



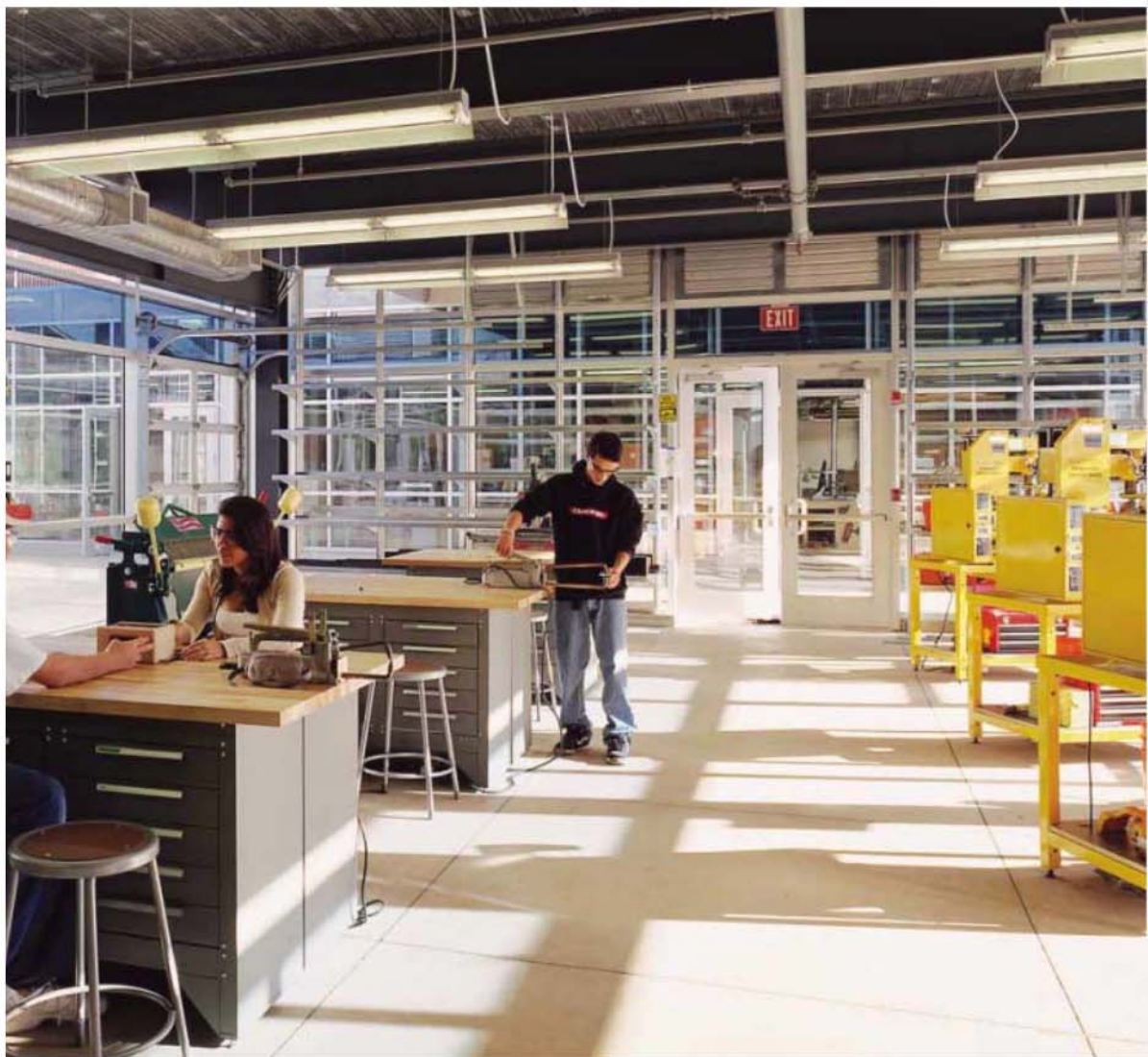
terrace. The architects enlarged the existing theater, connected the administrative offices to the campus, and reworked the various levels between all the buildings.

The project serves as a model for the education of the students: It uses straightforward concrete, glass, and steel constructional systems; exposes mechanical systems; has a huge window into the server room; and promotes alternative energy sources through photovoltaics and four still-to-be-installed wind turbines.

After decades of having the studios tucked in dim spaces at the corner of campus, placing them in the center enlivened Lick-Wilmerding. Playing on the school's motto, Peter Pfau, AIA, presented their competition entry saying "we put the hands at the heart." A grand stair tumbles from the main entry plaza to the studio level. The work yard lies adjacent to the faculty parking lot, easing the movement of materials. Each studio has at least one wall of floor-to-ceiling glass punctuated by large doors. Project storage shelves line the window walls, so even when studios are closed, the work yard becomes a display place for the work in progress.

Commentary

"Experiencing all this transparency," says Maisel, "has been breathtaking." Indeed, with daylight streaming in on pale ocher concrete floors, the spacious, well-equipped studios for glass, metal, and woodworking do not feel underground. Instead, this impeccably detailed, glassy world of activity remains visible from a huge range of places on the campus. By digging the building in and creating the work yard as an outdoor room, the project becomes, as Pfau claims, "connective tissue." "We thought the spaces in between as important as the spaces you finally get to," says Dwight Long, principal in charge for Pfau Architecture. In addition to providing exciting new studios, the scheme resolves, with a light-handed mastery, the various outdoor spaces, the multiple geometries of the previous buildings, and the numerous floor levels generated by the sloping site. ■



Lycée Français New York City

2

POLSHEK PARTNERSHIP MAINTAINS AN OLD SCHOOL'S ELEGANCE WHILE DELIVERING SPACE, LIGHT, AND UNITY TO ITS NEW BUILDING.

By Sam Lubell

Architect: Polshek Partnership Architects—Susan T. Rodriguez, Jim Polshek, design partners; Joseph L. Fleischer, managing partner; Joanne L. Sliker, project manager; Chris Andreacola, project architect; James Sinks, technical director; Charmian Place, director of project interiors

Client: Lycée Français de New York

Engineers: Cantor Seinuk Group (structural); Thomas Polise Consulting Engineer (mechanical); Langan Engineering and Environmental Services (geotechnical)

Consultants: Judith Heintz Landscape Architecture (landscape); Brandston Partnership (lighting); Shen Milsom & Wilke (acoustic/telecom/A/V); Harvey + Marshall (theater); Gordon H. Smith Corporation (curtain wall)

Size: 158,000 gross square feet

Cost: \$55 million

Sources

Security: Ducibella Venter & Santore

Hardware: Richard Hausler Glezen Fisher

Metal/glass curtain wall: W&W Glass Systems

Channel glass: Lamberts; Bendheim Wall Systems; W&W Glass Systems

Precast-concrete facade panels: BPD L Béton Prefabrique

Masonry: Tri-State Brick & Stone

For more information on this project, go to Projects at www.architecturalrecord.com.

Lycée Français' new campus on Manhattan's Upper East Side offers a study in contradictions. Divided into north (Upper School) and south (Lower School) towers and linked in the center by common spaces, the building alternates between spacious and intimate, Modern and traditional, practical and elegant, urban and insular.

The architect, Polshek Partnership, has skillfully integrated a wide array of competing needs into a building program that was demanding even by New York City standards.

Program

The French school made the difficult decision to leave its beautiful (but cramped) Beaux Arts town houses, scattered on six sites throughout the East Side, in 1999. Completion of the new quarters in 2003 made Lycée Français the first independent school in Manhattan to build a new facility in decades (like the Lycée, New York's other schools had for years been adding new buildings as needed in a piecemeal fashion).

Before the move, says Yves Thézé, the school's head, students of various ages had little sense of connection with each other, while most spent considerable time in transit. Thézé says he took an average of twenty cabs a week, shuttling between the school's various buildings. Thus the new location provides more space and modern facilities



and also, Thézé says, a school spirit and a sense of community that was long-missing.

But accommodating 1,250 students and faculty once housed in six buildings into one, 158,000-square-foot space was not achieved without a struggle. Another formidable effort was incorporating the cherished elegance of the school's former buildings, as well as the strict French desire for order, into a sleek Modern building that had no

interest in trying to imitate the past.

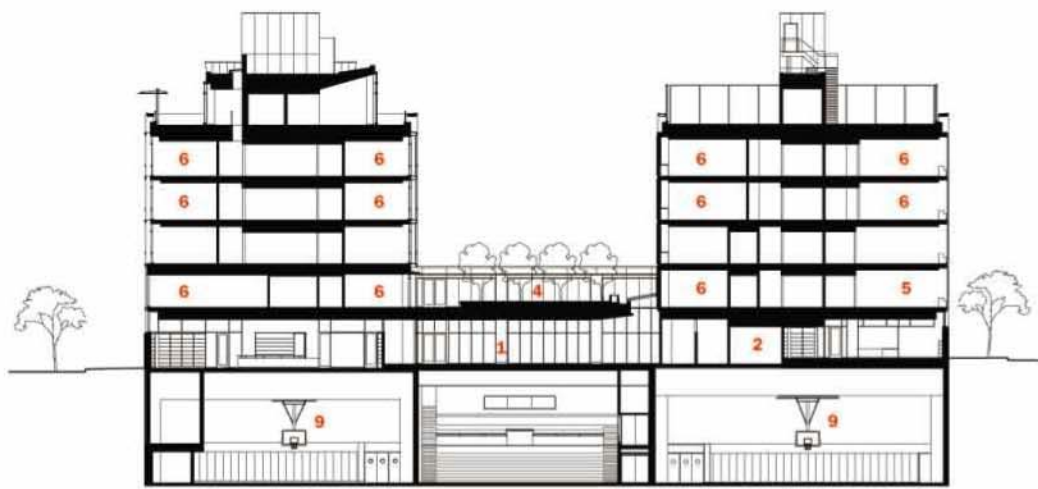
Solution

With space at a premium, Polshek first pushed areas with no need for natural illumination, like the gymnasiums and auditorium, underground, through extensive excavation.

Above ground, the firm employed horizontal sight lines throughout the building to maximize the appearance of space. For example, one can see straight into



A grid of channeled glass on the building's north facades (here, facing the courtyard) lends elegance to the entrance and reveals the strict ordering of spaces inside.



SECTION A-A

1. Commons
2. Library
3. Playroom
4. Courtyard
5. Offices
6. Classrooms
7. Drive-through
8. Auditorium (future)
9. Gymnasium



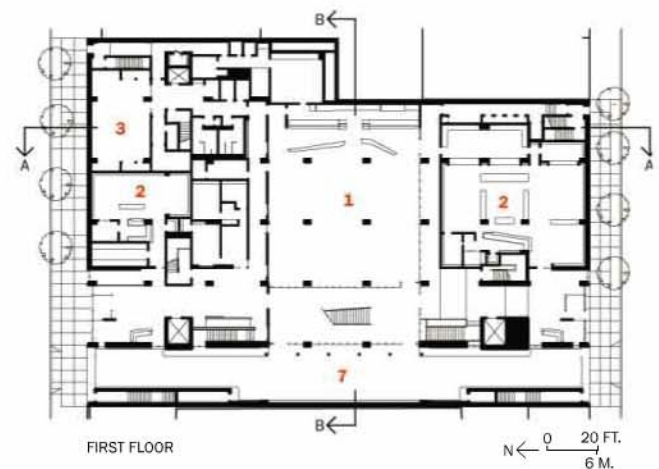
SECTION B-B



THIRD THROUGH FIFTH FLOORS



SECOND FLOOR



FIRST FLOOR



Light penetrates the building's commons from above and from all sides (below left). Areas with no need for natural light, like the gymnasiums and auditorium, have been pushed underground through extensive excavation (elevations above).

classrooms on the north side from carefully aligned rooms on the far south.

Tall spaces at the school's "coeur," or heart, utilize both vertical and horizontal connectivity to enhance feelings of volume. Here, Polshek maximizes the central area by stacking a simple yet refined courtyard above the commons, a large room vital to maintaining community. Skylights illuminate the commons, which is also bordered by a two-story glass curtain wall. The wall's tall windows establish a visual connection to the adjacent two-level "grand escalier," from where they also allow a look into the floating courtyard. Views into the courtyard from around the building not only augment the perception of space, but provide a glimpse of nature and give students an intimate sense of orientation at all times.

The sense of height in the building is amplified by vertical bands of green-tinted channeled glass on the north-facing facades, which draw the eye skyward. These graceful windows, whose reflected light produces a gentle radiance, contribute to a reserved and elegant school entrance that maintains a sleekness true to the Modern form. (Vertical bands of precast concrete and clear windows on the south-facing facades are not nearly as effective in this respect). The interior light produced by the channeled glass is warm and glittering: "Students are mesmerized," explains Polshek principal Susan Rodriguez. Yet somehow, the added light enhances concentration, while the window grid's pattern reflects the rigorous order demanded by French learning, evidenced by classrooms of almost uniform size and shape throughout.

Commentary

While the building has quickly suffered the scratches and knocks expected for an edifice serving more than a thousand youngsters, evidence of its success can be found in the top floor art room, where Upper School teacher Tim Riordan works.

Riordan, a professed claustrophobe, finds his ample new space bathed in natural light (and space,

thanks to skylights adjoining the fifth and fourth floors), in contrast to the former school's art rooms located in the basement. He and his students freely express delight. "It's an inspiration just being in the classroom," he says. Most teaching rooms are equally blessed with light, thanks to a hallway layout that puts smaller staff rooms on each tower's inside and larger classrooms on the outside. In such a tight space, the preference for student over staff space makes it easy to see where the school's priorities lie throughout the building. "The students come first here," says Rodriguez. ■

Looking from the *grand escalier* (above), visitors can see the commons (visible below the stairs) and the central courtyard (visible at the top), an elevated plane that appears to float in space, providing a valuable point of spatial reference. A computer room (right) is attached to the library and connected to the building and the street on all sides by windows.



Horace Mann School

San Jose, California

3

MOORE RUBLE YUDELL ARCHITECTS' SMALL URBAN CAMPUS REVIVES A DOWNTOWN AREA AND PROMISES OPPORTUNITY FOR LOCAL FAMILIES.

By John King

Design architect: Moore Ruble Yudell Architects & Planners—John Ruble, FAIA, principal in charge; James Mary O'Connor, senior associate in charge; Adam Padua, project manager; Alberto Reano, Martin Saavedra, Lisa Belian, design team

Executive architect: BFGC Architects & Planners

Client: San Jose Unified School District

Engineers: Dasse Design (structural); Capital Engineering (mechanical); Mazzetti Associates (electrical)

Consultants: Pamela Burton Associates (landscape); Mazzetti Associates (lighting)

General contractor: TBI Construction Manager

Size: 86,000 square feet

Cost: \$21 million

Sources

Curtain wall: Vistawall

Aluminum windows: Moduline

Glazing: Pilkington

Skylights: Kalwall

Doors: Vistawall; Trimtech; Weyerhaeuser; Cookson

Furnishings: N.I.C.

Lighting: Gardco; Prescolight; Bryant and Hubbell

For more information on this project, go to Projects at www.architecturalrecord.com.

A school has occupied the corner of Sixth and East Santa Clara Streets in downtown San Jose since 1864, but after a 1909 schoolhouse was demolished in the 1970s, students were consigned to portables. As part of a lawsuit involving desegregation, a local judge ruled that this constituted substandard conditions for the mostly lower-income students, creating the opportunity for design architects Moore Ruble Yudell (MRY) and executive architect BFGC to craft a miniature campus with a strong urban feel.

Program

From the start, public officials wanted more than simply an educational facility for as many as 700 children. The school site is across the street from where builders are erecting a new City Hall designed by Richard Meier, FAIA, so a reborn Horace Mann School sends the message that San Jose's push to revive downtown involves more than civic monuments. "An urban school means we've got kids and families downtown," says Peter Geraghty, of the city's redevelopment agency.

But if two sides of the site are framed by large commercial and civic structures, to the north and east are single-family homes rooted

John King is the San Francisco Chronicle's urban design columnist. He was a finalist for the Pulitzer Prize in Criticism in 2002 and 2003.



in San Jose's suburban past. Neighborhood residents wanted meeting rooms and park space as well as a school for their children. Sentimental attachments entered in, with many participants at community charrettes eager to save the site's two oldest trees.

For school officials, security was an obvious issue. Teachers asked for small spaces connected to their classrooms where they could work with students requiring special attention. City officials saw the school playing a role as a community center at nights and on weekends.

For their part—as might be

expected from a team led by a firm that counts early Postmodernist Charles Moore as one of its founders—the architects wanted to make sure that what got built was a fun place to be. "Children deserve a comfortable place," says MRY senior associate James Mary O'Connor. "We wanted to create the opportunity for wonder and exploration."

Solution

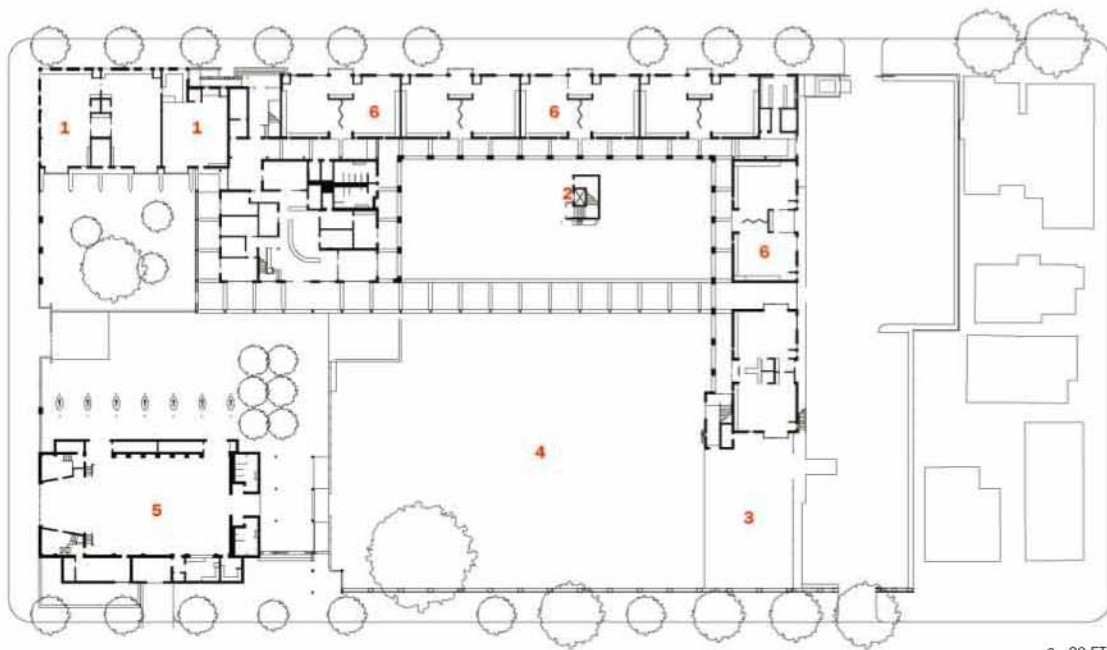
The press of competing demands led MRY and BFGC to stack three floors of classrooms atop each other along the site's western edge. The materials are simple and

The campus at once mitigates the differences among its varied neighbors and creates a welcoming destination for families. Yellow railings line stairways and upper-floor corridors, and playful square "portholes" are cut into classroom walls.





The gated play areas are sited on the east, with protective angled translucent canopies (below left and right). A well-lit cafeteria doubles as a multipurpose area and performance space (left and opposite, top), and the minicampus features a two-story library (opposite, bottom).



1. Library
2. Tower
3. Proposed day-care center (subsequent phase)
4. Grass play area
5. Cafeteria, multiuse area, performance space
6. Classrooms

MAIN LEVEL

0 20 FT.
6 M.

strong: exposed concrete block topped by metal cladding that folds up over the third floor to serve as roofing. What keeps the mix from griminess is a range of supersaturated colors—yellow railings line stairways and the upper-floor corridors, and playful square “portholes” cut into classroom walls at an ideal height for young children.

The classrooms are arranged with kindergarten and first grade on the ground floor, second and third grade above, and fourth and fifth grade on top. A small glassed-in room, perfect for individual study or time outs, joins each pair of classrooms. The library occupies a two-story space, and the school’s multipurpose cafeteria facility is a freestanding structure with a full stage and kitchen.

The scale of the school shifts on the eastern side of the site, dropping in height and opening up where it faces the older residential neighborhood, greeting nearby homes with grass and various trees. The vertical approach allowed more than half the site to remain open, and that land is arranged with a care that makes each piece seem larger than it is. Angled translucent canopies stretch over walkways to screen out sun and rain and to serve as a demarcation line between the lawn and the black-top or play structure.

Commentary

One second-grade teacher tempers her enthusiasm for the new Horace Mann with a comment that the exterior “is a little institutional,” and she’s right—at a glance, especially from the west, it veers toward the cliché of industrial chic. But the feeling inside the school is welcoming, protective, and oddly intimate, with niches and byways for students to make their own. This school makes no apologies about being in the middle of a city; it glows with the understanding that kids need their own joyful turf. In an age with campus security concerns and financial constraints, Horace Mann doesn’t overlook the most basic student needs: a place to be a kid, and a place to realize one’s potential. ■



Abbe Science Center Solebury School New Hope, Pennsylvania

4

COUNTRY LIVING INSPIRED HILLIER ARCHITECTURE TO EXPERIMENT WITH CEDAR-BARN AND GRAIN-SHED AESTHETICS.

By Jane F. Kolleeny

Architect: Hillier Architecture—*Barbara A. Hillier, AIA, principal in charge/project designer; Bradley Walters, designer/project manager; Jose A. Atienza, designer/project architect*

Client: Solebury School

Engineers: Greenman-Pedersen (*m/e/p and structural*)

Consultants: Van Cleef Engineering Associates (*landscape*); Grenald Waldron Associates (*lighting*)

General contractor: E. Allen Reeves

Size: 13,200 square feet

Cost: \$3 million

Sources

Exterior wood: K+L Millwork

Metal roofing: Atas International

Glazing: Alderfer Glass Company

Entrance doors: Steelcraft; Mohawk

Hardware/locks: Schlage

Hardware/hinges, pulls: Hager; Kawneer

Hardware/cabinets: Hafele

Custom cabinets/woodwork:

K + L Woodworking

Custom benches: American

Millwork

Interior lighting: Essential; Ledalite; Lightolier; Insight

Exterior lighting: Lumière; Gardco; Omegalux; McPhilben

The setting in Buck's County around New Hope, Pennsylvania, couldn't be more romantic. Mossy and weathered stone walls define the boundaries of the fields of the pastoral farms that dominate the area. The Solebury School occupies such a farm, built by a Quaker family in the 18th century, consisting of a barn, farmhouse, and carriage house. The school, which opened in 1925 and purchased its present site the following year, today accommodates about 220 coed students, 64 of whom live on campus, in grades 7–12.

Program

The school desperately needed a science building to replace the tiny one it had. In its land-use plan, Hillier established an appropriate location for the L-shaped building that, together with an existing stucco library, defines a quad. The quad opens to a field that will soon be the site for playing fields and the school's new gym. Both the original wood-frame gym [featured in *ARCHITECTURAL RECORD*, July 1949, page 128] and the headmaster's house were designed by William Hunt, a well-established midcentury architect. Together, the existing farm and these two buildings determined the design context in which subsequent buildings evolved.

Today, headmaster John Brown promotes a casual, interactive style of learning among students, faculty,



and staff. A “get your hands dirty, in your face” kind of a guy, he took a course on lab design and visited numerous science facilities to understand the project. “We wanted a noninstitutional building from an architect more strictly known for institutional buildings. We were lucky

to get exactly what we wanted.”

Designer Barbara Hillier, AIA, wanted to use local materials. Fieldstone proved too expensive, so wood was the logical choice. “The design of the building’s cedar skin differentiated it from the uniformity of stucco buildings on campus.”

For more information on this project, go to Projects at www.architecturalrecord.com.

Inspired by the area's ubiquitous grain sheds, the building's long, slender volume and warm red tones lend a barnlike aesthetic. A two-story lounge at the joint of the "L" features a pitched roof and multishaped windows (right and opposite, bottom). Light from the windows dramatizes night views (below). The entrance leads to a long corridor brightened by full-length windows (opposite, top).





The Abbe Science Center consists of four labs, four classrooms, a meeting room, a greenhouse, and long, glazed hallways that double as art galleries. Well-lit labs provide space for experiments and study (left), and a windowed corridor leads to the student lounge (below).

1. Lounge
2. Faculty office
3. Restroom
4. General classroom
5. General science
6. Physics
7. Chemistry
8. Biology
9. Greenhouse
10. Entrance
11. Existing library
12. Courtyard
13. Campus entry road



The Solution

Sited along an east-west axis, it is the first building erected on the 90-acre campus in 50 years. Hillier saw the building as a metaphor for the campus itself: "The authentic rustic character of the existing campus inspired the design of the building." Without being derivative, it complements not only the age and setting of the campus but its modest Quaker origins.

In Hillier's design, a two-story volume at the bend of the otherwise one-story arms of the "L" houses a gathering place for student life. One wall of this unique space opens to an adjacent farm through a large picture window with mullions forming a dynamic, Mondrianlike pattern. The other wall opens to the landscape via narrow, irregular square and rectangular peek-a-boo windows that dice the landscape into succulent bits and stimulate curiosity. At night, the volume appears like a cheerful jack-o-lantern, with an inviting glow.

Barbara Hillier, whose firm is best known for institutional work, loved the professional contrast this project provided for her. Instead of being part of a huge, multiheaded team meeting in boardrooms of large companies, she formed part of a team of three. "Unlike some of the larger projects on which I have worked, the intimate scale of this project afforded the opportunity to leverage the initial design idea and express it consistently throughout the building."

Commentary

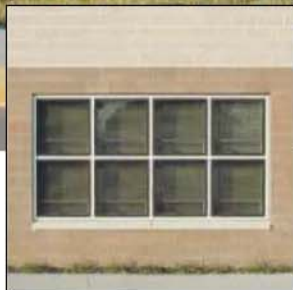
The school was wise to develop a land-use plan. Significant site changes resulted as a consequence, and more are planned. By the time the old gym becomes either a student center or performance space, the new gym gets built, and the barn is adapted to performing arts use, the fragmented pieces of the 1700s, mid-20th-century, and more recent buildings will come together. For now, the bubbling humanity and casual air of country life so evident at the Solebury School provide the campus with a sense of unity. ■



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A building mock-up helps The New York Times company see its future (169).



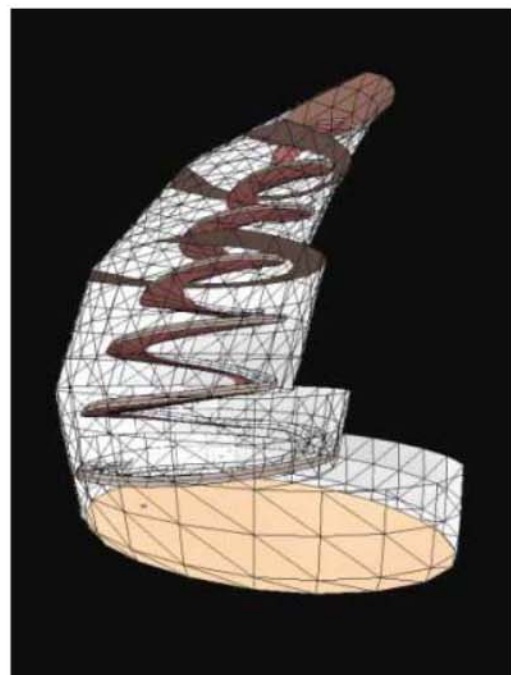
As PV gets popular, designers ponder the look of solar panels (161).

Every fall, RECORD's technology editors produce a list of topics to be covered in the following year's issues—things like building systems, facade design, or new materials. Last year, our research yielded so many new developments in building science that we issued a special supplement, titled *Innovation*, that focused on cutting-edge technologies and research whose effects on architecture are likely to be profound. But even after *Innovation* was published, we found ourselves with more story ideas than space to run them. What to do with the overstock?

The solution was simple: We gave ourselves a makeover. This month, we introduce a revamped quarterly section, Architectural Technology (née Digital Practice in 1998). Four times a year we'll enhance our monthly coverage of building science with extra features, news stories, and other information about how all kinds of technologies—digital and otherwise—are affecting the way buildings are designed, constructed, and operated.

You'll still see stories about computing and architecture, as well as product announcements and the continuing-education feature, this month focusing on acoustics (at right, the atrium of Foster and Partner's London City Hall, which was modeled extensively for acoustic performance). We're trying new things, too. In a section called Zoom In, we take a closer look at a project, a material, or a construction method—any topic worthy of further investigation. For this month's China issue, we showcase a planned new office tower in Shanghai, which is already winning accolades for its green-building and high-tech features.

Today's buildings are very complex, comprising structures, systems, and materials; designing them is an increasingly sophisticated exercise. We believe advances in building science are for the better. We look forward to keeping you posted. *Deborah Snoonian, P.E.*



(149).

Hearing Is Believing: ArupAcoustics Has Put the Audio Back Into Acoustics

AURALIZATION BRINGS SOUND INTO THE DESIGN PROCESS FROM THE START

By Sara Hart

Sound is arguably the most elusive and personal of all the human senses. Acoustics is the study of the physical properties of sound, which, like the subjects of other building sciences, can be measured, quantified, and charted. But since sound quality is largely subjective, acoustic engineering, unlike structural and mechanical engineering, for instance, is both a science and an art.

At the upper reaches of acoustic design—concert halls and opera houses—the architecture, comprising the volume, shape, and finishes of a space, is responsible for the performance of the sound. One can simply review the list of factors that determine what makes these building types “good,” if not necessarily “great”—quietness, loudness or strength of sound, tone or frequency, reverberation, resonance, definition or clarity, intimacy or presence, liveness, spaciousness, texture, and power—to understand the challenges that confront both architect and engineer.

Throughout the past century, acoustic engineers, armed only with arid calculations and the inimitable geometry of precedents, struggled to persuade clients that they could combine all of these ingredients to create an acoustically exceptional space. The process is not unlike convincing a client to commit to an architectural design by verbally describing what the architect imagines it might look like. It hasn’t helped that the goal of many 20th-century concert halls has been to put architectural original-



ArupAcoustics has recreated the sound of the original Neues Gewandhaus in Leipzig, Germany, considered the world’s greatest concert hall in its day, but destroyed in 1944.

ity ahead of acoustic considerations, as the controversy perennially swirling around the acoustics at Lincoln Center’s Avery Fisher Hall attests. As world-renowned authority Leo Beranek states in his preface to *Concert Halls and Opera Houses: Music, Acoustics, and Architecture* (New York: Springer-Verlag, 1996 and 2004), clients get iconic buildings and then “hope that the halls have excellent sound.”

Although historically, acoustic engineers have come to the design process at a disadvantage, there are now electroacoustic data-gathering and computing technologies that graphically display the acoustic performance of sounds from their point of origin until they decay completely. Both 2D and 3D ray-tracing techniques (also known as geometric acoustics) are accurate, albeit preliminary, ways of determining the path that sound waves will take from a source to a receiver. Using these tools, the engineer can effectively communicate the acoustic consequences of a design to the architect, who is, by training, predisposed to understand the phenomena when it’s presented visually.

Two-dimensional ray tracing uses bitmap images to create a computer model. This technique can be used very early in a project to analyze the effect of shaping, geometry, and placement of acoustic materials to achieve the desired response. Three-dimensional ray tracing is clearly superior to 2D, because the engineer can quickly determine more about how sound will reverberate and reflect off of a room’s surfaces in 3D. Sound “particles”—representations of the total energy produced by the sound source—are sent in all directions. The engineer can determine

CONTINUING EDUCATION



Use the following learning objectives to focus your study while reading this month’s ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 158 and follow the instructions. For additional opportunities to receive Continuing Education credits, and to learn about important changes in AIA Continuing Education guidelines, go to www.architecturalrecord.com, under Resources, then click on Continuing Education.

LEARNING OBJECTIVES

After reading this article, you should be able to:

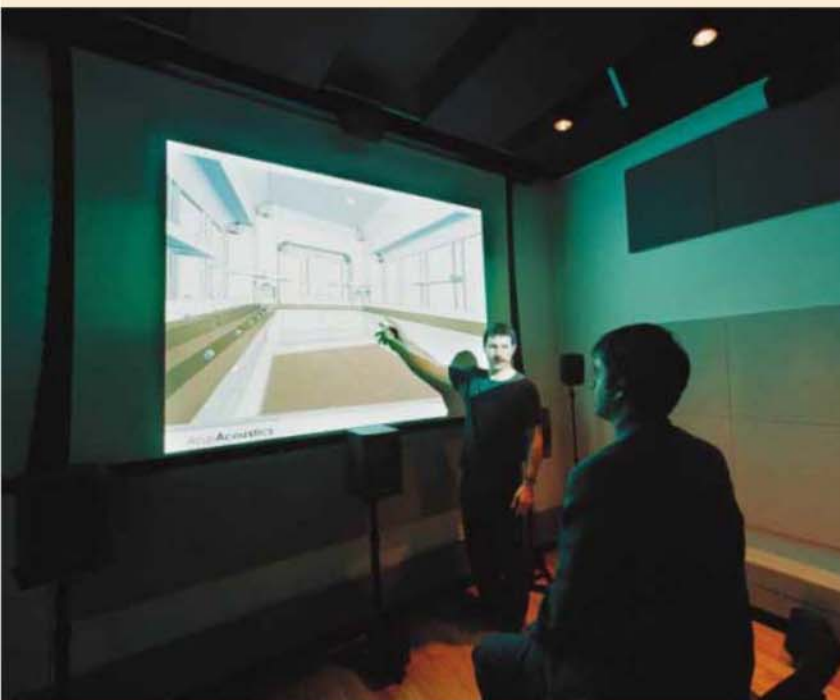
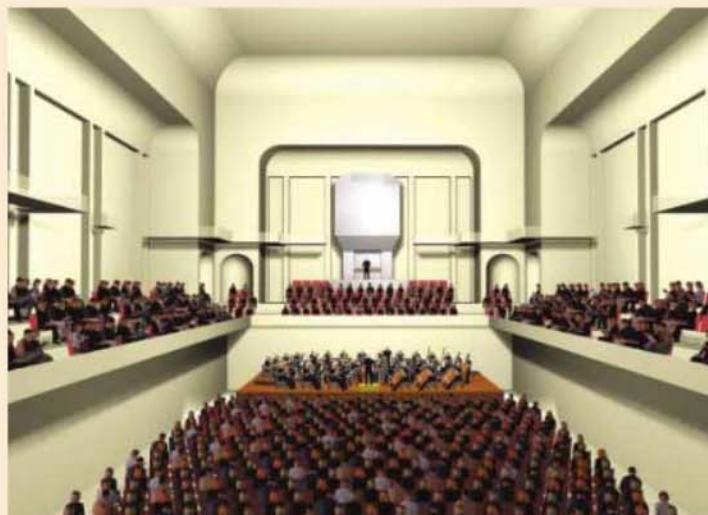
1. Explain acoustic ray tracing.
2. Describe an impulse response.

For this story and more continuing education, as well as links to sources, white papers, and products, go to www.architecturalrecord.com.

In the SoundLab (below), ArupAcoustics' engineer Neill Woodger describes the special sound created in the alcoves of a prototype design for the Recital Hall at the Constellation Center

in Boston (top right), while colleague Raj Patel listens to the effects. Using a benchmarking technique known as auralization, the engineers and architects manipulated the design of the

Recital Hall until they achieved the clarity and envelopment of the Grosse Musikvereinssaal (1870) in Vienna (bottom right).



the preliminary locations of sound-absorbing, -reflecting, or -diffusing surfaces and study the effect they have in a space.

The acousticians in the New York office of the international engineering firm Arup used a proprietary version of 3D visualization to model the sound-wave propagation for the Greater London Authority (GLA) Council Chamber, designed by Foster and Partners [RECORD,

THE RAY-TRACING TECHNIQUE IS VERY USEFUL IN UNDERSTANDING HOW THE SOUND ENERGY FLOWS AND MOVES ABOUT COMPLICATED SPACES.

February 2003, page 110]. As the model progressions show (page 152), the architects and the engineers collaborated to create multiple iterations of the form until all the acoustic goals were achieved.

The results are based on initial AutoCAD drawings from the architect and create a dramatic visualization of the acoustic characteristics of the space. Three-dimensional ray-tracing routines use visualization

tools and techniques to examine the early region of sound propagation within a space. The properties of sound are evaluated by looking at reflections from room surfaces. This technique is very useful in understanding how the sound energy flows and moves about complicated spaces. It can be used to identify focusing and echoes as well as the effectiveness of absorption placement.

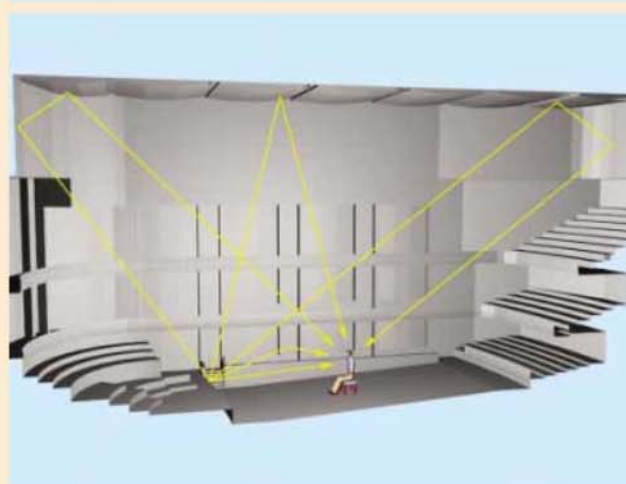
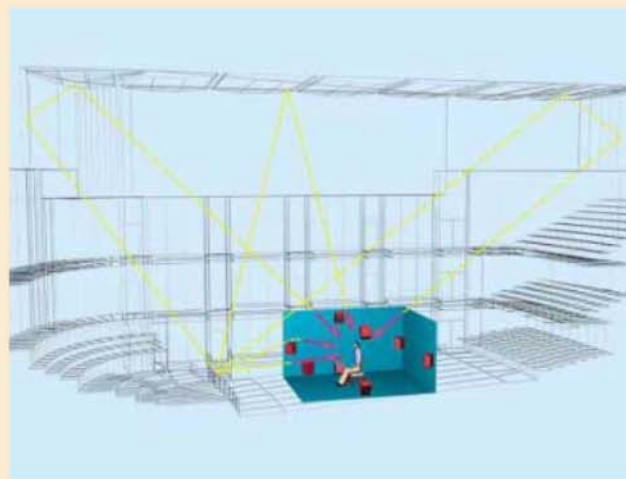
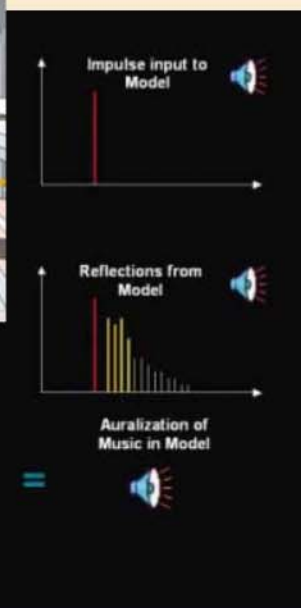
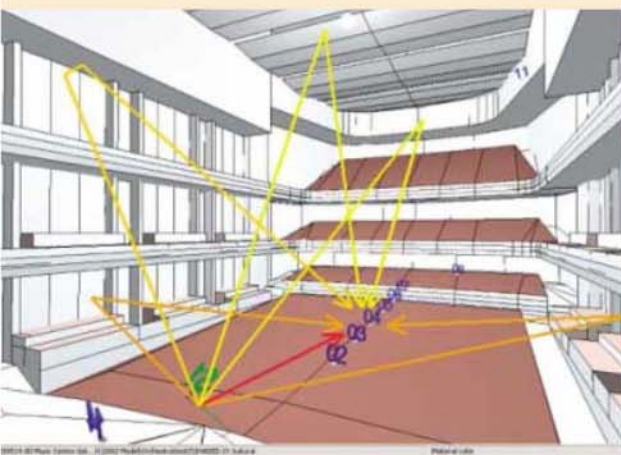
And yet, although the process was successful, all parties would agree that “seeing” sound is not the same as listening to it. Patel explains that our subjective impression of the reflections is dependent on the time of arrival and the level relative to the initial sound source. “2D and 3D ray-tracing techniques can be used to analyze the timing of arrivals, by measuring the distance they travel, knowing the speed of sound is constant in air, and applying the simple equation: $\text{time} = \text{distance} \div \text{speed}$,” says Patel. “However, it is more difficult to calculate the relative level of these reflections and also, in most rooms, there are a lot of reflections to analyze.”

He explains, “Ray tracing allows preliminary identification of key surfaces that result in reflections arriving ‘late’ at a receiver. But it is more difficult and time-consuming to identify the influence these reflections have on our subjective impression of the sound in a room. To be

The computer model of a concert hall (below) is used to calculate the transfer function between source and receiver. The impulse response is then multiplied with the anechoic music (recorded with no sound reflections)

to produce the auralization of the hall. After the reflection sequence of a real concert hall or model is captured (top right), the reflection sequence is reproduced inside the SoundLab (bottom right) using a 3D sound

system. Anechoic music is combined with the impulse, allowing the music to be heard as it would be in the original hall. The design can be changed immediately to assess acoustic differences.



able to know this, you have to be able to 'listen' to what they sound like."

As principal Neill Woodger laments, "Communication [of the acoustic strategy] is difficult with only numbers and graphs as tools [even sophisticated computer modeling], because, when all is said and done, only hearing is believing."

Auralization

Imagine listening to the rich symphonic sounds of Beethoven's *Egmont Overture* in the acoustic perfection of the Grosser Musikvereinssaal in Vienna. Then, one moment later, you're hearing the same piece in the Concertgebouw in Amsterdam. The magical transport from Austria to the Netherlands was actually a virtual one, yet as authentic as the real thing. There is a point to listening to two halls side by side, because even the world's greatest concert halls have different acoustic signatures. And it's the signature that carries the intellectual and emotional impact.

Three years ago, Woodger, Patel, and Alban Bassuet set out to put the listening back into acoustics. They designed and specified a space in the Arup New York office—an acoustically neutral environment, with special attention given to room dimensions and recording-studio-quality

finishes, to create the perfect environment for listening to musical sounds and specifically identifying and understanding the acoustic nuances of architectural spaces. (It is not incidental that many of today's young acousticians, like Woodger and Patel, are also classically trained musicians. They have sophisticated "ears" and are able to infuse the physics of sound with intuition and knowledge of the performance in architectural space. Until 15 or 20 years ago, engineers came to the field of acoustics through the back door, says Woodger, by which he means they drifted into it from other areas of engineering or architecture. Nowadays, students can major in acoustics, a specialty that seems to draw those with both musical talent and an engineering aptitude.)

ArupSoundLab, as it is called, represents an evolutionary advance in acoustic design. From comparison of 2D architectural plans and sections to 2D and 3D acoustic visualization, architects and clients can now include the sensual listening experience of auralization to actually hear how their buildings will sound. According to Woodger, "auralization is the ability to render accurately the sound of a space, whether built or not, while immersed in a controlled listening environment."

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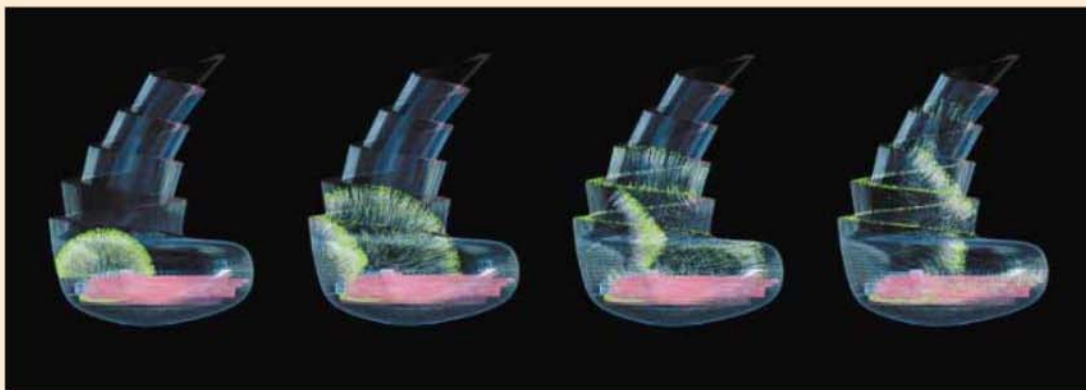
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INSULATION

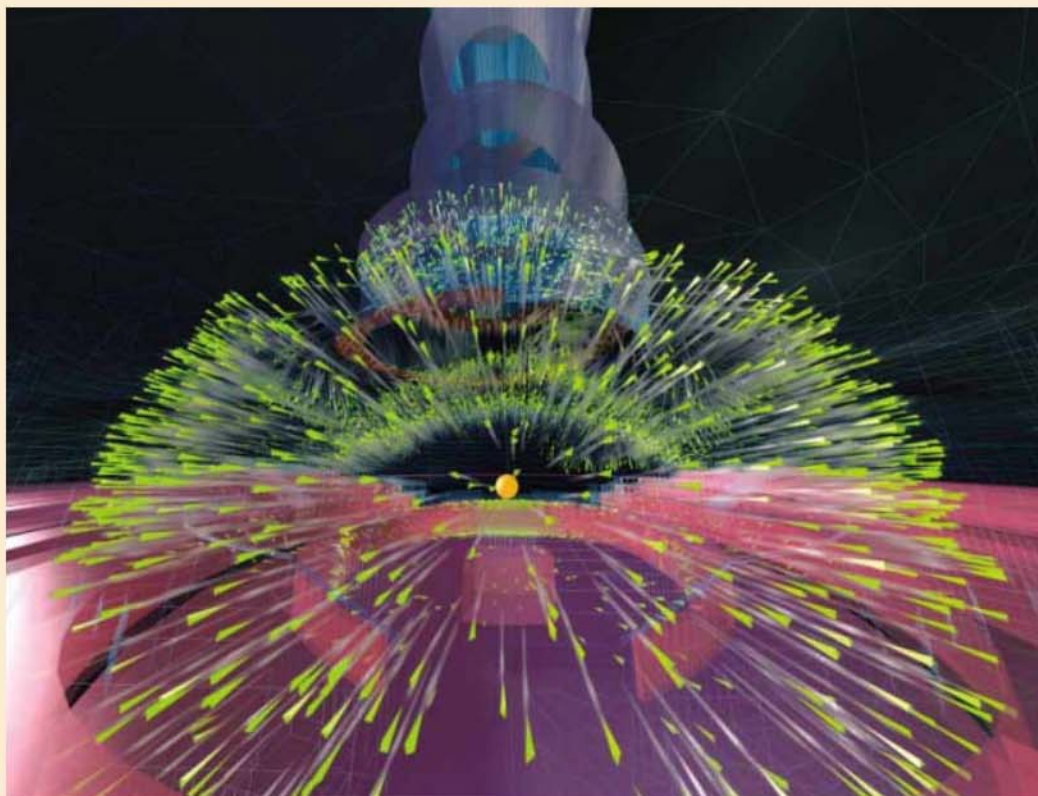
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ROOFING

SIDING



These stills from a 3D animation of the sound propagation within the Greater London Authority (GLA) Council Chamber were produced using ArupAcoustics' in-house 3D visualization technique. The images are based on the initial AutoCAD drawings from Foster and Partners. The tool was used to develop the shape of the sound-absorbing spiral surfaces.



The client who gave momentum to this project is Glenn Knickrehm, the force behind Constellation Center, a new performing arts center in Boston. Each of four separate halls, designed by ArupAcoustics with Cambridge-based Stubbins Associates, hosts specific programs in early and Baroque music, Baroque opera, cinema, and experimental works. Knickrehm's extensive knowledge of the prominent concert halls

THE "IMPULSE RESPONSE" IS THAT ACOUSTIC SIGNATURE, AS UNIQUE TO EVERY SPACE AS A FINGERPRINT.

that influenced the development of these musical forms in Europe led ArupAcoustics engineers to measure the acoustic signatures of more than 50 halls in the United Kingdom, the Netherlands, Italy, Austria, France, and Germany.

In the past, benchmarking of new concert hall design was achieved by comparing the physical dimensions and materials or designing to achieve the same measurable acoustic parameters, such as the commonly used Reverberation Time, to achieve a similar sound. This

was a one-dimensional approach to a multidimensional experience, and reverberation time does not adequately describe the behavior of sound in three dimensions. Inevitably, small changes in geometry and materials were often made, and (until now) there has been no guarantee that the new space will have any aural relationship to the reference space.

The process of collecting the acoustic signatures has allowed ArupAcoustics to calibrate measurements in the real halls against computer models they built of the same halls. The aim was to create three-dimensional and audible benchmarking.

Engineers in the room being measured create an impulsive sound (a short, sharp sound similar to a gun shot) and play it through an omnidirectional loudspeaker. The impulse is recorded at the listener's position to get the original impulse and all the room reflections. This "impulse response," as it is called, is that acoustic signature, which is as unique to every space as a fingerprint. The response is captured using a 3D SoundField microphone, which is actually four microphones in one, allowing individual analysis of reflection information in the X (front-to-back), Y (side-to-side), Z (floor-to-ceiling), and W (X, Y, Z simultaneously) axes.

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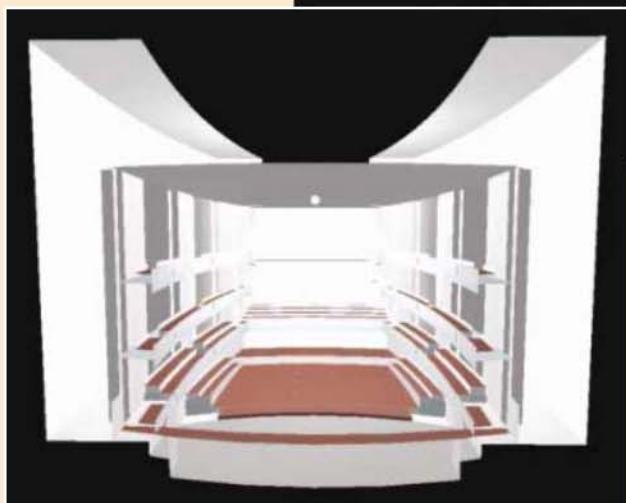
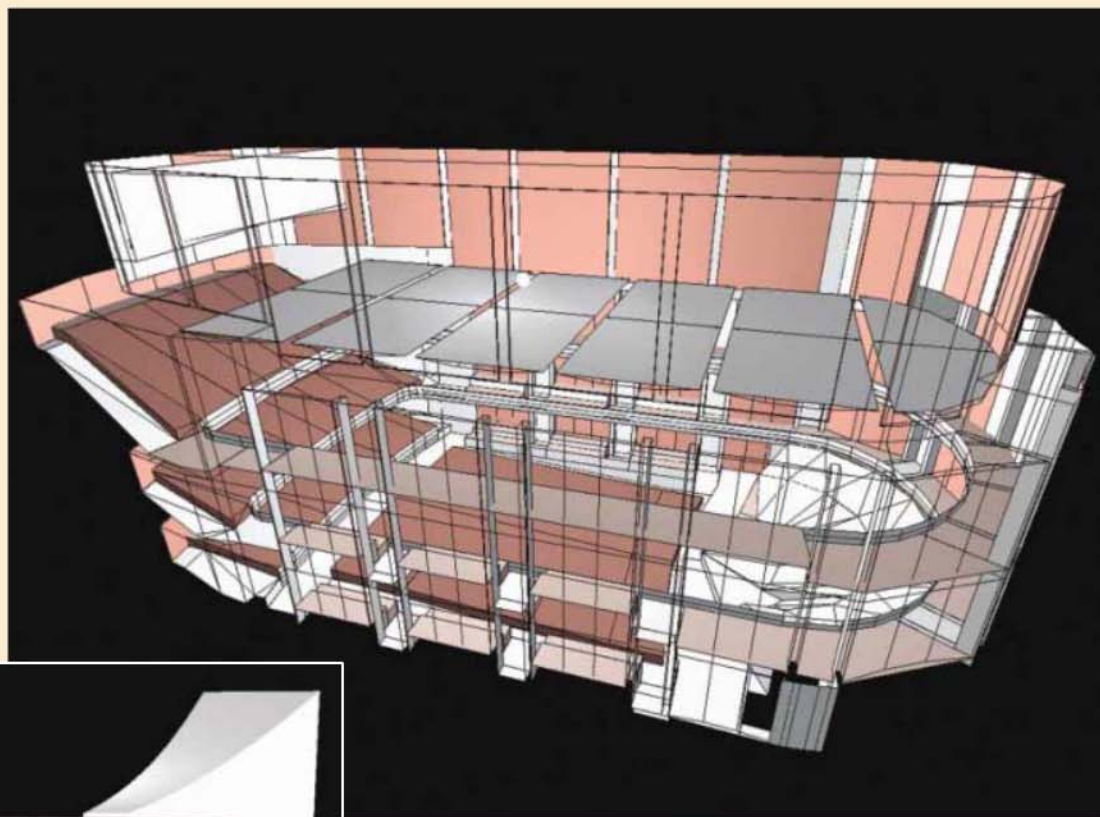
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ArupAcoustics creates studies for variable acoustics, such as a reverberation chamber (right). A design for a new 1,770-seat concert hall (bottom) will have a movable ceiling, divided into six panels with adjustable acoustic banners. Engineers use the SoundLab to demonstrate audibly the acoustic differences provided by the variable elements.



Back at the SoundLab, a 3D sound system replicates in space and time the measured impulse response. Once the impulse response is captured, it can then be combined with anechoically recorded (without echoes or reverberations) speech or music in a process known as “convolution.” Exactly the same process is conducted with a computer model.

Why anechoic? Obviously, anechoic spaces are completely free of sound reflections (no bouncing off the walls, so to speak). When a

ANECHOIC SPACES ARE COMPLETELY FREE OF SOUND REFLECTIONS (NO BOUNCING OFF THE WALLS, SO TO SPEAK).

musician is recorded in a nonanechoic space, the recording picks up the sound of the instrument plus all the reflections from the room surfaces. The music used in the convolution must be anechoic, or the output in the lab will be colored by the reflections within the original recording.

The output of the “convolution” is audible, and the sound of a space will change as the architectural form changes or the materials are substituted. While the same piece of music plays continually, you can

change the acoustic signature to any desired room and listen to subtle changes in acoustic character, comparing the great halls of the world to a new, yet-to-be-realized design. The process of 3D benchmarking is complete.

In the case of the Constellation Center, KnickKrehm wanted to know which of the four halls would be better to showcase Baroque opera. He dispatched a “golden ears panel” of musicians and experts to the SoundLab to evaluate arias and recitative in both the recital hall and the theater. The aural studies demonstrated that Baroque opera in the recital hall would require major revisions to the design, while the theater would be more compatible with this type of use, with only minor revisions.

Outside the (music) box

Only a handful of architects get the opportunity to design new concert halls or opera houses. However, the technology of auralization can be applied to most buildings. For instance, in both residential and commercial curtain-wall design, auralization studies can help a client decide whether more money should be spent to make the fenestration more

impervious to sound infiltration, or if the existing design provides sufficient protection.

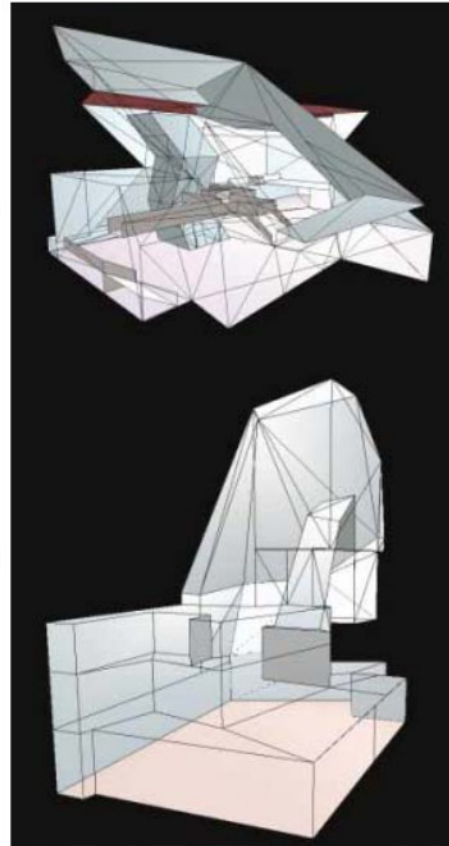
ArupAcoustics is busy engineering the acoustics for many projects—stadiums, such as Herzog & de Meuron's scheme for the 2008 Beijing Olympic Stadium (page 100) and Irata Isozaki's 2006 Olympic Torino Ice Hockey Arena; sports arenas; and schools. It is especially useful for complex geometries, such as the Lulu Chow Wang Campus Center at Wellesley College by Mack Scoggins Merrill Elam (bottom

AURALIZATION PLAYS A SIGNIFICANT ROLE IN EVALUATING WHERE THE MONEY SHOULD GO IN A PROJECT.

right); and museums and galleries, such as the Akron Art Museum by Coop Himmelb(l)au (top right).

In the past, composers often wrote music with a particular space in mind, so there was an intimate relationship between the music and the architecture. Today we live in an era when institutional and cultural buildings must be all things to all users, and as a result acoustic quality and the art of listening have suffered. Now, however, with musician-engineers putting science and technology in the service of art, buildings of the 21st century might be as highly evolved acoustically as those of more than a century ago when the bond of sound and space formed the soul of music. ■

The auralization process is useful in complex geometrical spaces, as it was for the design of the Akron Art Museum (top) by Coop Himmelb(l)au and the Lulu Chow Wang Campus Center (bottom) at Wellesley College. The latter must perform acoustically for choir, chamber, and disco music, lectures, and theater. By creating auralization studies of the space with different acoustic options, event sound was analyzed with the architect. Key members of the faculty went to the StudioLab to listen and agreed on a final design approach.



AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- ◆ Read the article “Hearing Is Believing: ArupAcoustics Has Put the Audio Back Into Acoustics” using the learning objectives provided.
- ◆ Complete the questions below, then fill in your answers (page 222).
- ◆ Fill out and submit the AIA/CES education reporting form (page 222) or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. Representations of the total energy produced by a sound source is called what?
 - a. Particles
 - b. 2D ray tracing
 - c. 3D ray tracing
 - d. Reflection
2. Two-dimensional ray tracing is different from 3D ray tracing because it uses which to create a computer model?
 - a. Particles
 - b. Bitmaps
 - c. Absorbing surfaces
 - d. Reflecting surfaces
3. Ray tracing evaluates sound by looking at which?
 - a. Absorption
 - b. Diffusion
 - c. Reflection
 - d. Particles
4. Our subjective impression of sound reflections is dependent on which acoustic conditions?
 - a. Time of arrival
 - b. Sound level relative to initial sound source
 - c. Direction and source of sound
 - d. Both a and b
5. Ray tracing is useful in the understanding and the investigation of all these conditions except which?
 - a. Convolution of sound
 - b. Identification of focusing and echoes
 - c. How energy flows and moves in complicated spaces
 - d. Identification of the effectiveness of absorption placement
6. A concert hall's intellectual and emotional impact are part of which acoustic attribute?
 - a. Communication
 - b. Signature
 - c. Impression
 - d. Convolution
7. In the anechoic chamber, all surfaces perform what function?
 - a. Absorb
 - b. Reflect
 - c. Diffuse
 - d. Echo
8. The process of collecting data from reference halls using SoundField technology is called what?
 - a. Recording numerical data
 - b. Setting parameters
 - c. Benchmarking
 - d. Collecting responses
9. Every concert hall or opera house has its own acoustic signature, which consists of which?
 - a. Original impulse only
 - b. Original impulse plus all the room reflections
 - c. Sound reflections only
 - d. None of the above
10. The process of combining the impulse response with anechoically recorded music or sounds is known as which?
 - a. Nonanechoic
 - b. Convolution
 - c. Audible
 - d. Collecting signatures



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In the U.S., architects are ramping up the design power of photovoltaics

SOLAR POWER IS ON THE RISE, AND DESIGNERS ARE USING IT TO MAKE A STATEMENT

By Peter Fairley

Solar power got a shot in the arm last year when an off-the-grid housing complex in Santa Monica won a merit award from the AIA Los Angeles chapter. Berlin architect and jury member Matthias Sauerbruch said that Colorado Court, by Pugh + Scarpa, was the first architectural application of photovoltaic (PV) panels that actually looked good. A national architectural jury agreed with him. Colorado Court went on to garner a 2003 AIA Honor Award [RECORD, May 2003, page 135], and soon the design world buzzed with admiration for its five-story-high walls of brilliant blue PV panels.

Ever since its nascent years, solar power has gotten a bad rap. In the 1970s and 1980s, clunky-looking (and often poor-performing) panels were tacked onto buildings as little more than an afterthought. The design-conscious railed against them; manufacturers responded by developing building-integrated PV products, which sought to disguise solar-powered materials in facades or roofs. But projects like Colorado Court and The Solaire, a new high-rise in Manhattan's Battery Park City, do just the opposite: They embrace, even celebrate, the look of conventional PV technology. In the process, they're defining a new aesthetic for green buildings—one that's well-established in Europe but still struggling for life in the U.S.

Gaining ground and making a statement

The use of solar power is growing rapidly. PV installations in the U.S. jumped 53 percent in 2002 and rose another 30 to 40 percent last year, according to the Solar Energy Industries Association. Not surprisingly, economics is driving demand. States like California are offering tax rebates and other incentives for using solar power. When combined with high energy prices, the payback period for investment in PV can be as little as four years.

PV use seems set to keep growing, with the increasing popularity of building green fostered by the U.S. Green Building Council and their LEED rating system. Solar power is worth one LEED credit toward certification—but perhaps more critically, PVs are among the most observable environmental amenities that can be designed into a building. For architects, making PV technology stand out puts their projects on the map with the public. Rafael Pelli, AIA, partner with New York-based Cesar Pelli and Associates, says this was one reason he highlighted the solar-power system in designing The Solaire's facade. "We were actively seeking some expression in the building that spoke about

Peter Fairley writes about energy, technology, and the environment from his home in Victoria, British Columbia. He also teaches journalism at the University of Victoria. This is his first contribution to RECORD.



Gregory Kiss and Nicholas Goldsmith, FAIA, designed structures using PV panels for *Under the Sun*, an exhibition about solar power mounted at the Cooper-Hewitt,

National Design Museum in 1998. Since that time, solar power's popularity has increased, thanks to rising demand for green-building techniques.

its intent," says Pelli. "The photovoltaics were visible and immediately identifiable as something different."

Solar panels adorn the upper reaches of The Solaire, like Manhattan's first solar high-rise at 4 Times Square [RECORD, March 2000, page 90]. But The Solaire also features a 28-foot-wide column of PV panels, starting above the southwest-facing front entrance and rising 13 floors. This feature screams "renewable power," whereas 4 Times Square's thin-film panels are indistinguishable from tinted glass. Pelli says the panels expand the design to "argue for a different kind of building expression" while also meeting the strict guidelines for Battery Park City, which specify glass and brick construction. The key, he says, is the pieced-together appearance of the cells. "They have a visual quality all their own, and yet they are very sympathetic, with the fine-grained texture of a brick wall. The monocrystalline cells break down into a series of pieces, so they feel like very modular units making up this larger field," he says.

Like The Solaire, Colorado Court is anything but shy about its photovoltaics. Pugh + Scarpa partner Lawrence Scarpa, AIA, says that his firm views sustainability as a design tool. At Colorado Court, power production was, in a sense, only part of the justification for using PVs on the building. "I thought it was crucial to making the building look good, and the only way we could sell that was if it had a function," says Scarpa.

PV is making a mark on infrastructure projects, too. A 1-megawatt installation for a car-park canopy at Naval Base Coronado in San Diego employs 3,000 blue crystalline PV panels, bathing the vehicles below in a mix of shade and light. The structure was installed by

Berkeley, California-based PowerLight. Tom Dinwoodie, the engineer-turned-architect who founded PowerLight, says the company aimed to match the airy feel of European train stations, hoping that visitors will step out of their cars and enjoy the view. As with Colorado Court's solar walls and awnings, natural light filters around the PV cells, providing enough illumination underneath to read by while protecting commuters and cars from blazing sunlight. "It's a fabulous effect," says Dinwoodie.

San Francisco-based 450 Architects brought this shadow-and-light effect indoors when they designed the Argonne Child Development Center in San Francisco. The firm used 17 semitransparent solar panels

CRYSTALLINE PV CELLS HAVE "A VISUAL QUALITY ALL THEIR OWN," SAYS RAFAEL PELLI, AIA, THAT HARMONIZES WITH BRICK AND OTHER BUILDING MATERIALS.

to build three south-facing skylights in the school's north-facing roof. Last year, the school was honored as one of AIA's Top Ten Green projects [RECORD, May 2003, page 54].

Even for installations on commercial roofs, where aesthetics are a secondary concern, PV is considered a huge improvement on what came beforehand. Solar panels backed by insulation are sprouting up atop big-box retail stores, manufacturing plants, and office buildings in California. A visual makeover is the inevitable by-product of this trend,

PHOTOGRAPHY: COURTESY THE COLT GROUP (LEFT); THE SOLAIRE (RIGHT)



Recent office buildings in Germany (left and opposite, bottom left) demonstrate a PV aesthetic that's just beginning to emerge in the U.S. At The Solaire in Manhattan's Battery Park City (below), solar panels are built into the

facade above the entrance, the most visible of the project's environmental features. Visitors to the Domaine Carneros Winery in Napa Valley can glimpse its rooftop PV array from surrounding hills (opposite, top left).



PHOTOGRAPHY: COURTESY POWERLIGHT (TOP LEFT); THE COLT GROUP (BOTTOM LEFT); NATIONAL RENEWABLE ENERGY LABORATORY (RIGHT TWO)

Dinwoodie says. “We tile roofs with these blue sparkling [PV] tiles. What was there before? Usually a gravel or a bituminous roof with puddles of mud.” Though many rooftop systems are invisible to all but air travelers, some are distinctly high-profile. In San Francisco, a 675-kW system atop the Moscone Convention Center is a magnificent blue field visible from downtown high-rises. Then there’s the shimmering solar rooftop of Napa Valley winery Domaine Carneros, which visitors can admire from the surrounding vine-covered hills. “It’s like the sea on this rooftop, and then you have the green from the hills. The rows of solar arrays bleed into the rows of the vineyard,” says Dinwoodie.

It’s tough being beautiful

For architects who want to use PV as a visual element, finding the right material for each project can be challenging—especially when government funds or grants require projects to use locally sourced materials. Pelli’s firm originally designed The Solaire with a black stripe of PVs, but had to purchase the panels within 500 miles of Manhattan to qualify for New York State’s green building tax credit. As a result, blue panels were used instead of black ones. (Pelli says he has no regrets: “I think they’re more beautiful, more visually interesting as a material.”) Pugh + Scarpa had to make last-minute adjustments to the design of Colorado Court when PV panel manufacturer BP Solar, a subsidiary of the oil and gas giant, bought out their supplier. Scarpa says they convinced BP Solar to custom-manufacture panels with a clear backing to let the light shine through, but the design still had to accommodate BP’s panel size. Public

funds used for the project made it impossible for Scarpa to turn to Japanese or European suppliers, which make a wider range of panel sizes, he says. In theory, as more states and owners in the U.S. adopt PV technology, local manufacturers will offer more choices in the coming years.

Another challenge in making PV installations look right is educating contractors. Scarpa wasn’t fully satisfied with the installation at Colorado Court, noting that the electrical, plumbing, and structural subcontractors—who’d never put in a solar system before—didn’t understand that the panels were part of the visual aesthetic of the building. As a result, he says, the placement of equipment such as electrical conduits and plumbing lines was not carefully considered. Scarpa recommends that architects require detailed engineering drawings of installation locations and procedures as part of the bid package, as well as preconstruction meetings with contractors to review the system and answer questions.

The disappearing act

The ultimate challenge to integrating PV technology is accommodating those customers, or neighbors, who are holdouts against the renewable-power look. Solar-power NIMBYs are often particularly vocal in residential areas. In California, the state’s legislative assembly saw fit to expand the state’s Solar Rights Act last year, seeking to quash antisolar building codes and bylaws across the state that were largely put in place because of aesthetic concerns. Even in San Francisco, a city that has embraced solar power, residential architects must proceed with caution



PV technology: The rigid and the flexible

Photovoltaic cells are composed of semiconducting material, usually silicon, which makes them capable of producing electricity from sunlight. Two technologies for making cells offer different looks and applications as they vie for space on rooftops, facades, and shading structures.

Wafer (or cell) technology

Crystalline cells, the most widely used technology on the market, are grown in long cylinders and sliced into wafers. *Polycrystalline cells* are either drawn in sheets or made into ingots and then cut into squares. They’re cheaper but produce less power than crystalline cells.



Thin-film technology

Thin-film cells are made by depositing layers of semiconductive material onto a glass, metal, or plastic surface. They’re less rigid than crystalline cells and even cheaper than polycrystalline, but less efficient than either.



to avoid costly, time-consuming disputes with neighbors. Richard Parker, AIA, a partner at 450 Architects, says 90 percent of his firm's projects last year included PV, but not all are visible from the street. For example, he designed a parapet to hide a solar installation atop a home in Noe Valley that is surrounded by Arts-and-Crafts-style houses. "We're going to be generating a ton of power, and you're not even going to be able to see it," says Parker.

Another solution is to switch to products that incorporate PVs within building materials. This is where thin-film products come in. When viewed from outside, thin films have a uniform color, usually black or gray; they can also be produced on flexible substrates like plastic, making them easier to apply to metal roofing and fiberglass-rein-

AS DEMAND FOR SOLAR POWER RISES, DOMESTIC MANUFACTURERS WILL BEGIN OFFERING MORE OPTIONS FOR SIZES AND COLORS OF PV CELLS.

forced tiles. Architects agree that opaque, thin-film PV panels have a role to play in some buildings. "Where you have an all-glass building and you're paying for the glass already, I think there's a logic to [using] it," says Pelli.

What thin films offer in stealth is offset, unfortunately, in efficiency. They produce as little as one-third the power as conventional crystalline PV cells—a serious liability given that their installed costs are only marginally lower than that of crystalline cells. Still, especially for large roof systems, their economics can make sense.

A leading proponent of using thin-film technology atop build-

ings is Southern California Roofing, the nation's fifth-largest roofer. In 2003, two of the firm's principals established a separate start-up company called Solar Integrated Technologies in Los Angeles, to bond charcoal-colored thin-film PV to metal and membrane roofing. The new product is both a roof and a power-generating system. "We turn a liability into a producing asset," says Richard Schoen, FAIA, executive vice president for both firms who teaches sustainable architecture and community planning at UCLA. "We aren't on the roof," says Schoen, "we are the roof."

Schoen has seen a rise in interest in thin-film technology from architects, and says his firm has had inquiries about designs ranging from solar sails to tensile structures. In other words, thin films, like their crystalline predecessors, are themselves begetting exciting and highly visible solar structures, as Scarpa and fellow Pugh + Scarpa partner Angela Brooks are realizing in a transformation of the Venice, California, bungalow they share. A solar canopy comprised of thin-film panels will wrap a 1,200-square-foot extension of their 700-square-foot home. They call the addition the Solar Umbrella, recalling Paul Rudolph's Umbrella House and Heyward Apartments of 1953. The panels of amorphous silicon will meet all of the Solar Umbrella's electrical demand, while screening the house from intense southern sunlight. "Solar panels, conventionally relegated to a one-dimensional utilitarian application, define envelope, provide shelter, and establish a distinctive architectural expression," the partners write in a summary of the project.

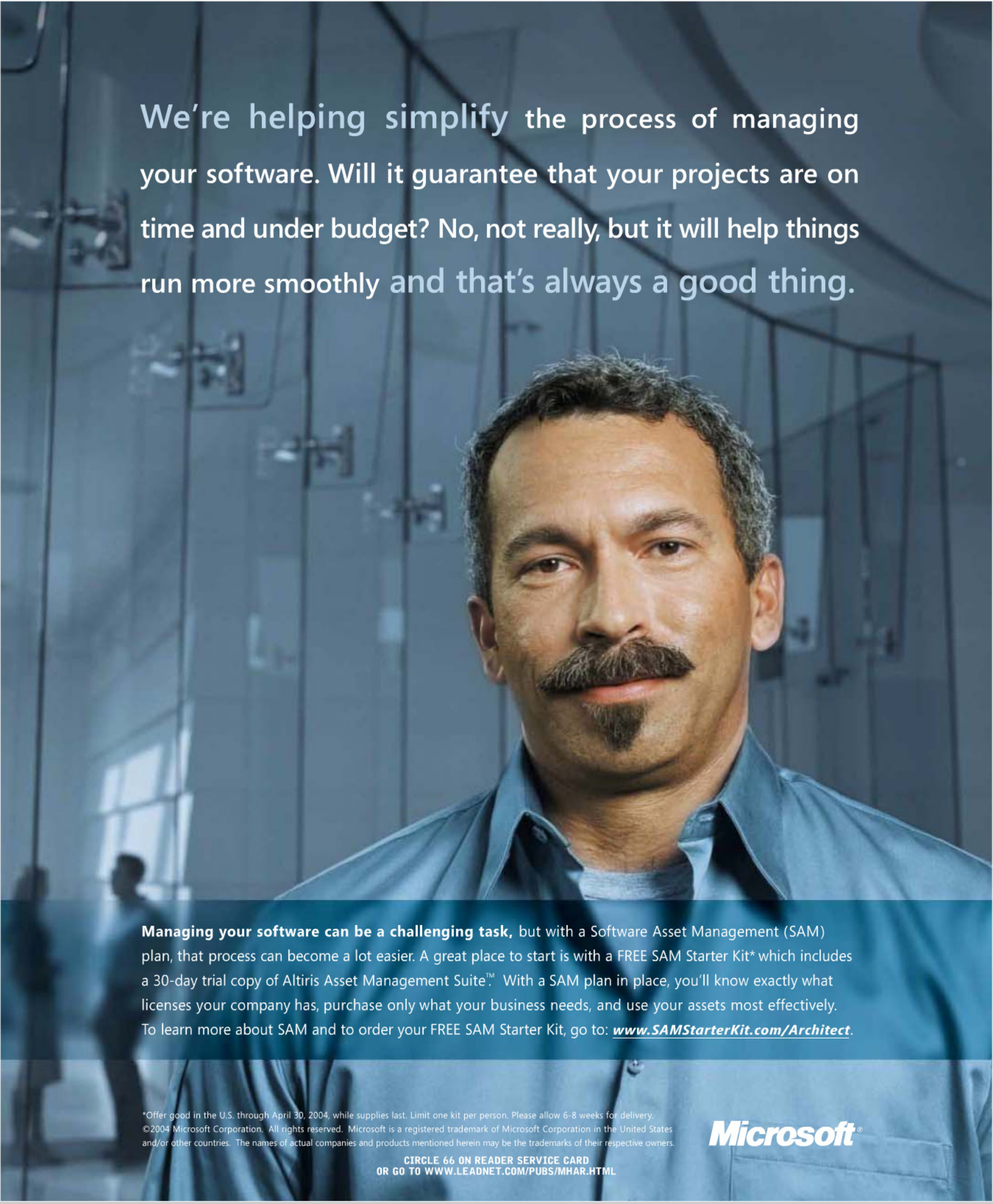
The panels look like tinted black glass from the outside, but from below, says Scarpa, incident light is filtered as through a prism, resulting in rainbows of illumination that "enliven the more permanent and fixed elements of the design," say the designers.

That's certainly a far cry from tacking solar panels to the roof. ■

Light and shadow are filtered through PV cells on the facade of a municipal building in Winterthur, Switzerland (right). An array of sparkling blue tiles tops the Toyota Motor

Sales building in California (below right). The PV cells for Pugh + Scarpa's Solar Umbrella (below) will provide form and shading, and meet all its energy needs.





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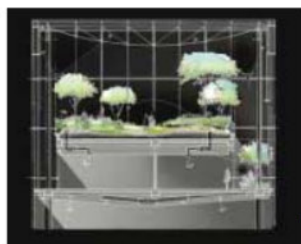
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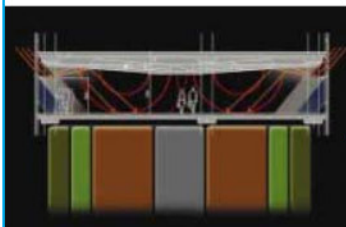
By Deborah Snoonian, P.E.

Transparent office buildings are not a common sight in Shanghai—yet. But this daily newspaper wanted to convey a sense of openness to the city. So San Francisco firm Kaplan, McLaughlin, Diaz designed a glazed tower that harvests daylight and incorporates greenery. Scheduled to begin construction this fall, it garnered a 2004 MIPIM/Architectural Review Award for unbuilt work, the same one given to Foster and Partners for Swiss Re in London. Now that's news fit to print.



Sky Garden

Topping the tower is a green roof partially enclosed by a steel-and-glass structure with rolling fabric shades and photovoltaic panels incorporated into overhead shading devices. Workers can enjoy its tea garden and miniature golf course.



Floor Plans

Light shelves and wide floor plates allow sunlight to penetrate, while sunshades and a facade of high-performance glass prevent excessive heat gain. A wireless network gives workers mobility.



Solarium

This multifloor atrium will create a "stack effect," enabling air to circulate freely. Photovoltaic panels used in the facade will partly shade the interior. Each floor will have a view.

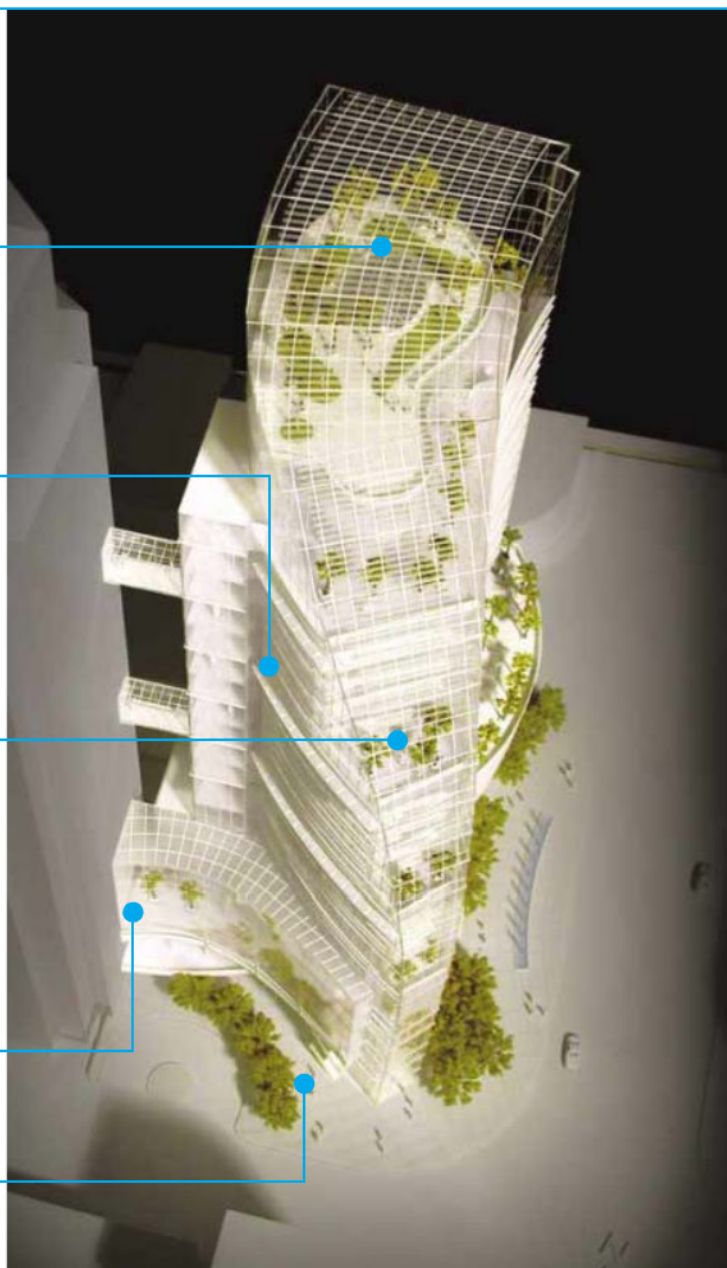


South Atrium

The tower's entry level will be open to the public for shopping and dining. The atrium also acts as a heat buffer for the tower.

Site Design

Underground parking reduces the project's footprint. The building is shaped to mitigate wind loads; setbacks on its southeast side allow views of Pudong, Shanghai's new business district.



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Systems: A newspaper's chase to save energy and slash costs • Indoor air quality: Does UV light cure sick-building syndrome? • Energy: Microturbines convert steam to energy for pennies

BYTES

The **Lower Manhattan** building team has issued guidelines on how to **minimize environmental damage** while developing the area. The group encourages builders to **limit energy consumption**, collect rainwater and **minimize runoff** during construction, and use materials that are **recycled or recyclable**.

The **National Renewable Energy Laboratory** is researching new ways to make **photovoltaic cells** by combining engineered proteins with bits of semiconductor material.

Philips Electronics and **E Ink Corporation** are partnering to develop a flexible **digital "newspaper"** made of plastic that displays text and grayscale photographs. They expect to release the product in **2005**. Can rolled-up electronic CAD drawings be far behind?

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (**ASHRAE**) has published a new standard for providing acceptable **indoor air quality for low-rise residential buildings**, which comprise single-family homes and multifamily housing.

Professor Benjamin W. Schafer at Johns Hopkins University has posted a free **software tool for assessing the stability of thin-walled structures**, at www.ce.jhu.edu/bschafer.

Last fall, MIT's **Stratton Student Center** was fitted with an **array of photovoltaic panels** 60 feet long by 15 feet wide, as part of a **citywide program to install solar technology**.

Presentations from last fall's **BuildingEnvelopes.org** conference on **innovations in facades and environmental systems** are available online at www.buildingenvelopes.org.

The Times banks on a mock-up to try out systems for its new building

Just a stone's throw from The New York Times' printing plant in Queens stands a glimpse into the company's future: a 4,000-square-foot mock-up of its planned Manhattan headquarters. This one-of-a-kind laboratory for kicking the tires on everything from lighting systems and furnishings to the facade itself is giving The Times a leg up on how its new building will work long before its foundation is dug—and is saving money in the process.

The original plans for a mock-up were much more modest. "We were going to test furniture layouts in a warehouse in Manhattan," says David Thurm, vice president of real estate development for The Times. But after the 2000 unveiling of Renzo Piano's model of a fully glazed tower, partially shaded by ceramic rods, the company initiated discussions with engineers, manufacturers, and researchers. "The design is innovative, and that's important to us. We wanted to ensure we'll end up with a high-performance, energy-efficient building," Thurm says. At a January 2003 meeting, scientists

from Lawrence Berkeley Laboratories (LBL) suggested creating a test bed where actual lighting conditions could be measured and compared to values predicted in computer models. The Times agreed, and the mock-up opened in December 2003.

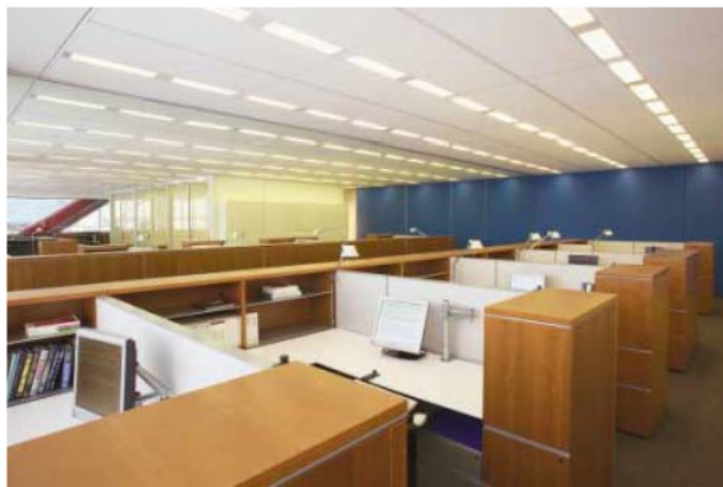
The structure stands today just as envisioned by Piano and architect of record Fox + Fowle. Four companies manufactured its one-of-a-kind facade. Interior architect

Gensler designed the offices, cubicles, and open spaces, using furnishings from multiple manufacturers. Susan Brady Lighting Design specified the different lighting and shading systems under scrutiny. For LBL's "solstice-to-solstice" research program, funded by a grant from New York State's energy agency, 90 sensors silently collect real-time information on indoor temperatures, lighting levels, and reflectivity as ambient lights dim and automated shades rise and fall in response to the sun's intensity.

These efforts will pay dividends when it comes time to break ground. "The building's systems will be affordable and easy to commission" because of the studies, says Thurm. The human touch is being given its due, too: Times employees will be allowed to work at the mock-up this spring to test-drive its comfort. Piano's design, it seems, is as innovative as The Times' approach to getting it built. "We think all buildings should be done this way," Thurm says. *Deborah Snoonian, P.E.*



The mock-up replicates the southwest corner of The Times' planned building (left). During sunset, its glass-and-ceramic facade is awash in a colorful glow (right).



Times employees will work at the mock-up this spring to test its comfort.

Tech Briefs

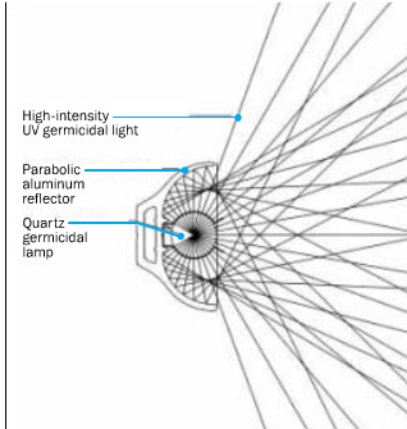
For improving indoor air quality, is UV treatment the light at the end of the duct?

Though sick-building syndrome is typically blamed on poor indoor air quality, it's difficult to trace the precise causes of a person's symptoms. Nonetheless, HVAC systems—those large-scale Petri-dish-cum-microbial Habitrails—figure prominently in efforts to deal with this workplace scourge. Recently, a team of Canadian and U.S. scientists may have spotted a light at the end of the duct: ultraviolet germicidal irradiation (UVGI).

A study led by McGill University of Montreal suggests that mounting UVGI lamps in air ducts can improve the health of a building's occupants. While it's been known for some time that zapping cooling coils and drip pans with UV rays can cut down microbial action, this study is considered to be the first significant demonstration of the technique's

health benefits.

Researchers surveyed 771 workers in several Montreal office buildings over a nearly one-year period. They installed UVGI lamps in the ducts of the buildings, turned them off for 12 weeks, then on for 4 weeks—a cycle repeated three times. The researchers noted a 20 percent drop in "building-related" symptoms (e.g., headaches, fatigue, skin irritation, and respiratory problems) among study subjects when the lamps were on. Allergy symptoms in some subjects dropped by as much as 40 percent. "I would recommend that if people have a problem with microbial contamination in their ventilation system, they use UVGI [instead of] germicidal chemicals," says epidemiologist Dick Menzies, the lead researcher on the study.



The McGill study used UV lamps with parabolic mirrors that increase the treated area.

Researchers also reported that UVGI was 99 percent effective at destroying microbes on duct surfaces, and about 25 to 30 percent effective in killing airborne bacteria.

UV treatment has advantages over alternatives like chemical disinfectants and ionization, according to experts. Disinfectants have a limited range and can pose chemical dangers of their own; ionization can cause particles to settle on the walls and floors of a building, where they can be stirred up again.

The study concluded it would cost \$52,000 to equip a roughly

118,000-square-foot office building with UV lamps, which would add \$14,000 in operating costs per year. This is a modest investment, they suggest, compared to productivity losses tied to sick-building syndrome.

A longtime fixture in hospitals and factory clean rooms, UVGI technology has attracted renewed interest from scientists and public health officials, who suggest

it may be effective in treating drug-resistant tuberculosis and SARS and could figure in bioterrorism-preparedness scenarios. Experts say the results of this study, while promising, must be replicated to be validated, and that neither UVGI nor other treatment techniques can correct design flaws that introduce airborne pathogens in the first place. "UV shouldn't be used as a band-aid," said J. Patrick Carpenter, senior engineering principal at Kling, a Philadelphia-based A/E firm. "You want to eliminate contamination at the source." *Ted Smalley Bowen*

Don't blow off steam—microturbines make cheap, clean energy from waste heat

Distributed power holds promise for reducing peak loads and improving the security of the energy grid. But the usual solution, diesel generators, involves nuisances like fuel storage, fire-safety concerns, and emissions permits. Buildings served by utility or district steam systems, however, can take advantage of microturbines—devices that eliminate those problems while producing almost-free power.

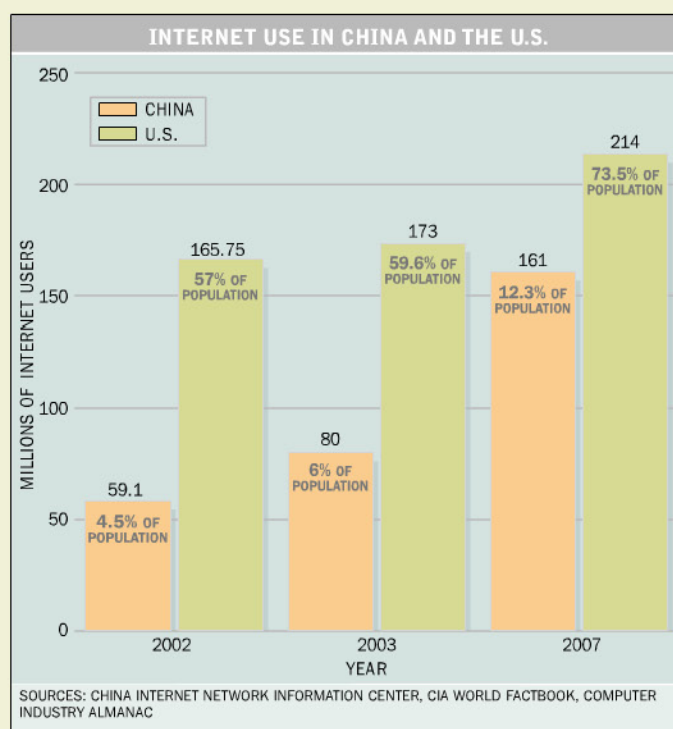
As the name implies, microturbines are small, taking up a footprint about a yard square. They don't generate stand-alone power, but use waste heat from high-pressure or district steam systems to produce energy, in a process adapted from manufacturing facilities like pulp mills. They cut emissions of nitrous oxides and carbon dioxide by 50 percent or more compared to diesel-powered generators.

One company, Douglas Energy of California, has a grant from the Department of Energy to install prototype systems in cities with high electricity prices. The company's 150-kW unit can handle the energy demands of a 200,000-square-foot commercial building in a moderate climate. At the Rolex Realty Building in New York City, the system feeds an absorption chiller that produces chilled water and requires no permits or emissions treatment. The company estimates its microturbines will last 20 years with regular maintenance.

More than 100 U.S. cities and many multibuilding facilities such as colleges are served by steam systems. With federal and state energy agencies offering grants to offset installation costs, microturbines could pave the way to a cleaner, energy-efficient future. *Lindsay Audin*

What the Numbers Say

In China, the number of Internet users is rising sharply—but even so, the majority of Chinese citizens still lack access to the wired world. *D.S.*





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Architect: LSC Design
General Contractor: Kinsley Construction, Inc.
Roofing Contractor: M. Potteiger Inc.
Profiles: Snap-On Batten & SNAP-CLAD
Color: Custom Color-Dark Colonial Red, Charcoal Gray

The major challenge in designing this structure was to create a wood board and batten siding look with maintenance-free metal. The PAC-CLAD Snap-On Batten Panel achieved that look, but was not designed to be installed as siding. Petersen Aluminum was brought in to consult with the design team. An alternate attachment solution was found and approved through a mock-up of the siding. Lapping the panel system with alternating panels made it possible for M. Potteiger Inc. to accomplish an installation of this magnitude.

This large barn structure, designed by LSC Design Inc., was then capped with 42,000 sq. ft. of Charcoal SNAP-CLAD Panels, complete with two 30 foot cupolas topped with a 7 foot weathervane in the shape of a bear. This 4-story building serves as a retail store for Boys Bear Collectibles, houses their corporate offices, a museum and a food court to accommodate large bus tours.

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Six new tools for today's architects

By Deborah Snoonian, P.E.

Revit 6

Autodesk
www.autodesk.com
(for Windows only)

Ever since acquiring Revit two years ago, Autodesk has been banking on this parametric design tool to entice its large customer base into the world of 3D CAD. Progressive releases of Revit have improved its collaboration and team communication tools. The major upgrade in Revit 6 is a "design option" feature that allows architects to produce, present, and simultaneously track different versions of the same project for a client within a single file (e.g., options for interior layouts, colors, and materials). This shortcut eliminates the need to create multiple memory-hogging versions of the same project and decreases the chance that designers will lose track of changes and revisions as design options are developed simultaneously. Another new feature allows a user to "borrow" one or more components of a design (e.g., a wall, stairway, or detail) even as another user is working on the same design, which enables different team members to work on multiple aspects of a project simultaneously.

Atmosphere

Adobe Systems
www.adobe.com
(for Windows only)

Adobe's new tool lets users create 3D content and animations at a lower cost than most high-end design software programs. It consists of three products: Atmosphere, the tool for creating the environ-

ments; Atmosphere Player, a plug-in similar to Macromedia's Flash plug-in that lets anyone using a Web browser have access to files created with Atmosphere; and an optional, publicly available server where users can meet online to view, change, and annotate 3D content. Using simple keyboard and mouse commands, a viewer tours a 3D environment built in Atmosphere from different angles and view-points.

Pictometry Online and Electronic Field Study (EFS) Software

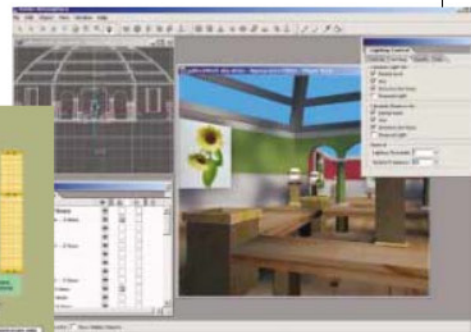
Pictometry International
www.pictometry.com
(for Windows and Mac)

Pictometry has patented a system that combines aerial photography with measurement software in a service that lets users download high-quality digital images on which dimensions can be measured by a simple click of a mouse. The company has a database of aerial photographs of 11 states and the District of Columbia; users can search by street address, county, or landmarks such as airports or well-known buildings. Images can be purchased and downloaded directly from Pictometry's Web site, and with the aid of Pictometry's Electronic Field Study (EFS) software, users can get dimensional data for any feature—in a building, street, even a grove of trees—by pointing and clicking directly on the maps themselves. The company will add photographs of more locations over time.



With Revit 6, team members "borrow" design components from a single file to develop them simultaneously.

Architects can create and explore interior spaces with Adobe Atmosphere and its free viewer.



Pictometry and EFS give users dimension information directly from aerial maps (below, an image of Arlington County, Virginia).



Tech Products

Symposium ID250 Interactive Pen Display

SMART Technologies
www.smarttech.com
(for Windows and Mac)

This leading seller of interactive whiteboards has released its desktop-size display and presentation device with a smaller footprint and at a lower price. Aimed at educators and team leaders who want to capture digitally the results of design reviews, critiques, and other collaborative work, the ID250 allows users to make notations on CAD files, photos, or other computer images directly on the display's pressure-sensitive screen. The device's tethered pen requires no batteries or special maintenance, functioning much like a stylus that's used to enter information into a handheld organizer. The ID250 can be connected to a larger monitor or screen so that others may view the work being done. Function buttons located at the bottom of the display can be programmed to access features of SMART's proprietary Notebook software, as well as tools like an on-screen keyboard and toolset. Additional software packages that come with the ID250, SMART Board and SMART Ideas, contain tools for inserting audio, video, and text notes into existing digital media.

Laser ScanArm

Faro Technologies
www.faro.com

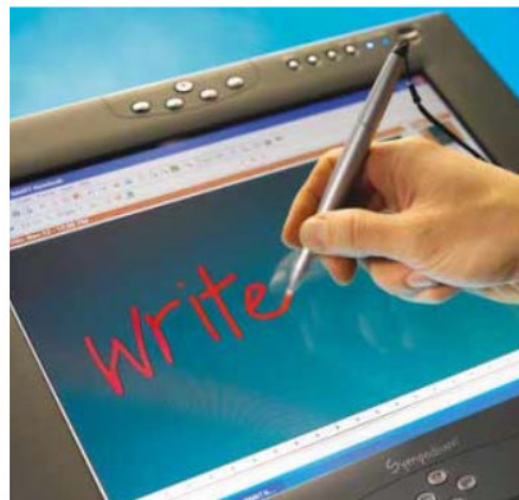
This device is a combined seven-axis laser-scanning measurement system—in English, this means it offers flexibility and portability. Designers and their collaborators can use the ScanArm to take the dimensions of physical models, or portions of buildings, for many different purposes (e.g., inspection, comparing physical data to CAD models, rapid prototyping, reverse engineering). Unlike similar instru-

ments, the ScanArm's hard probe (the portion of the device that touches an item being scanned) and laser scanner (which does not touch the item) are capable of taking measurements at the same time, saving users the hassle of grappling with attachments and cables. Its laser scanner measures more than 13,000 points per second. It comes equipped with software for analyzing the data, or "point clouds," that are collected by the scanner; the point clouds can also be read by competing software, such as Geomagic, PolyWorks, and Rapidform.

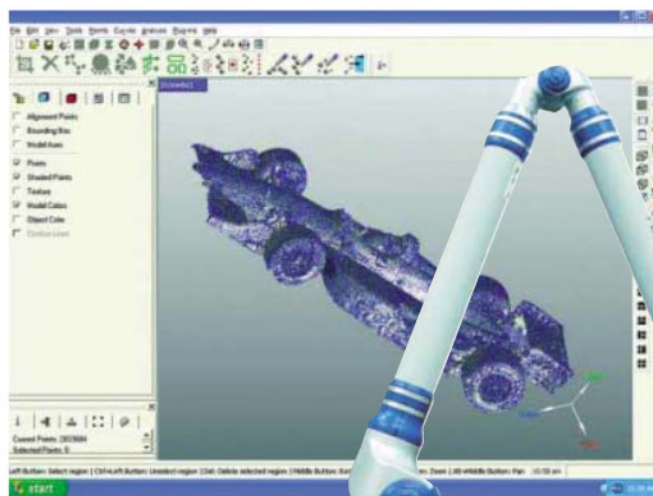
AirGen Fuel Cell Generator

Ballard Power Systems
www.ballard.com

This portable electricity generator is aimed (for now) at the Japanese residential market, where houses are smaller and energy costs higher than in many other parts of the world. Eventually, the company intends to manufacture them for North American and European markets. The AirGen is the first portable fuel cell suitable for indoor use. It makes electricity from separately sold canisters of hydrogen that snap onto the equipment and can be replaced during operation. As long as the canisters are attached, it can supply electricity indefinitely, and unlike gasoline- or other fuel-powered generators, it doesn't create excess noise or emissions that must be controlled. Appliances, lights, and other devices that would normally be plugged into an electrical wall outlet can be connected to the generator instead. It can also be used as a backup power source. With its built-in surge protector to prevent brownouts or high-voltage spikes, this device—though aimed at the household market—is an attractive option for ensuring that critical systems like phone rooms and server closets stay up and running. ■



The ID250's surface is pressure-sensitive for pen input.



Faro's Laser ScanArm can measure dimensions of physical models for digital analysis.



The AirGen Fuel Cell Generator, intended for residential use, makes electricity from hydrogen.

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SPILIGHTING

Lighting

A daylit American museum, a stroll through nighttime Montreal, and remembrance of things past in Japan

BRIEFS

Brush up on new techniques in daylighting

at the Lightfair International conference this month. Making its debut this year, the Daylighting Institute takes place in tandem with the Lightfair Institute's slate of educational panels on Monday, March 29, and Tuesday, March 30, 2004, at the Las Vegas Hilton Convention Center. Discover how to harness daylight using current technologies in glass, shading, skylighting, and controls to create functional, healthy, and energy-conserving buildings. **Topics of sessions include: Toplighting, Controls, Principals of Modeling, and Advanced Daylighting Systems.** A new Daylighting Pavilion in the exhibition hall will include leading manufacturers of daylighting and daylight integration products. For more information on speakers and registration, go to www.lightfair.com.

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While many of our colleagues at *RECORD* this month set their sights on China, we lighting editors cast a broader cultural net to tour projects around the world whose architectural illumination objectives are quite distinctive and divergent. The lights of March include a museum of American art and artifacts in New England, the enhanced nighttime profile of revered civic landmarks in Montreal, and a Japanese memorial poised for pondering war and remembrance. Up front in Creative Uses, we also survey a new commercial center in Bilbao and the sprucing up of Symphony Space, a favorite cultural center in Manhattan. It's an eclectic tour of sites that addresses bright spots in American art and music, charming streets no longer shadowy in a Canadian metropolis, and dark yet important lessons of wartime acts and their consequences. Learn how lighting helps accomplish this array of missions.

As we close this issue of the magazine in February, a harsh winter in New York has us longing for more daylight. If you are also looking ahead to invincible summer, plan a trip to the Peabody Essex Museum in Salem, Massachusetts. Moshe Safdie has brought unity to the 205-year-old institution and its surrounding neighborhood, with an addition that nearly doubles exhibition space for America's oldest continuously operating repository of art and artifacts. Filled with sunlight via a glass-enclosed courtyard and gallery skylights, the project allowed Safdie and lighting consultants Fisher Marantz Stone to explore the right mix of daylight and electric illumination.

In Montreal (below), Gilles Arpin has blazed a trail as the city's preeminent maestro of exterior lighting. From courthouses to churches, main plazas to footbridges, chances are you'll have a heightened experience of these landmarks upon your next visit.

Honoring the dead in the aftermath of the atomic bomb at Nagasaki would seem to be a heavy burden for a project team. Yet architect Akira Kuryu and Lighting Planners Associates managed to avoid a somber or oppressive scene by creating a sculptural composition incorporating water-filled basins, geometric forms, and light both substantial and fleeting. It's another trip worth taking. *William Weathersby, Jr.*



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A mixed-use commercial center in Bilbao warms industrial forms with illumination

Recalling his boyhood, architect Jay Valgora says he enjoyed visits to the steel mill near Buffalo, New York, where his father worked. Its soaring industrial spaces and sculptural scale left an indelible impression, he says. Valgora revisited this early fascination recently when his firm, Walker Group, was commissioned by the real estate company Filo (later bought by ING) to design the Max Ocio commercial center in Bilbao, Spain.

"Bilbao's industrial infrastructure was forced on a beautiful landscape," Valgora says. "Now that the city has become a showcase for architecture and design, since Frank Gehry's

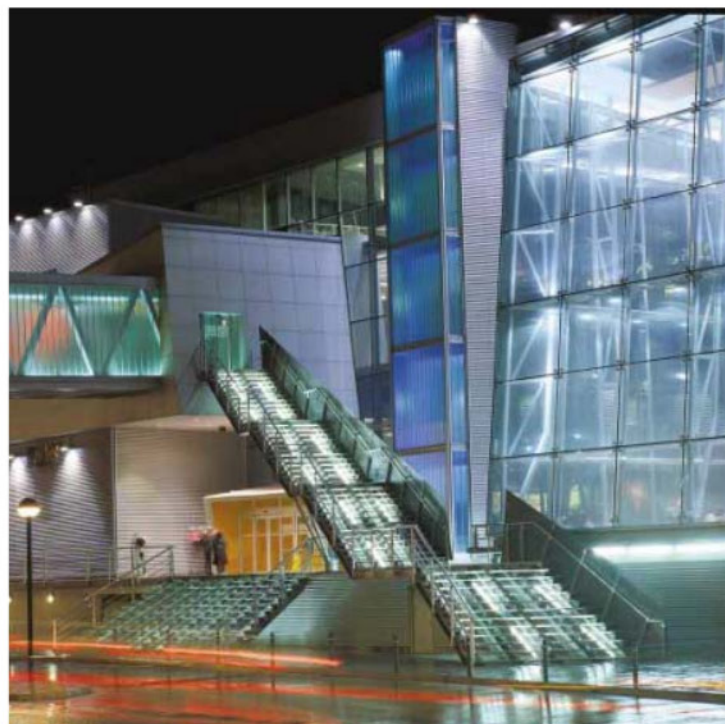
museum opened, it sets the bar high for new commercial projects."

Teaming with lighting designer Dusti Helms, Valgora delved into historical research documenting Barakaldo, the factory neighborhood that is home to the 280,000-square-foot, mixed-use center housing shops, restaurants, and entertainment venues. The city's steel-producing past is evoked by a facade layered with dramatic inter-sections of floating, corrugated-steel panels and structural U-glass. Helms highlighted the forms with lighting inspired by images of local vernacular structures. "We wanted a contrast

between high-pressure sodium and mercury-vapor light sources, and warm versus cool colors," Helms adds.

An interplay of lighting and form also stepped in for formal signage, which was restricted by the municipality. Because the center's facade faces a main artery running through Bilbao, the design team used lighting to boldly accentuate materials and form for a signature look.

A forced perspective



Linear fluorescents mounted beneath stair risers enhance the grand entry.

main stair framed by Cor-ten panels connects four levels of the center. Helms uplit the stairway with fluorescents mounted beneath the risers, allowing pedestrians to essentially become part of the design as they block light and cast shadows. A series of exterior stairways are lit by recessed uplights. A glass-enclosed elevator tower glows

with blue-gelled fluorescents. Asymmetric floodlights uplight the roofline's horizontal fin. Colored fluorescents illuminate a series of perforated metal panels to give graphic interest to the side of the building. A glass and steel bridge lit by neon makes a connection to surrounding streets.

Leanne B. French



In lieu of signage, lighting cues movement.

A De Stijl-inspired marquee puts a new face on Symphony Space

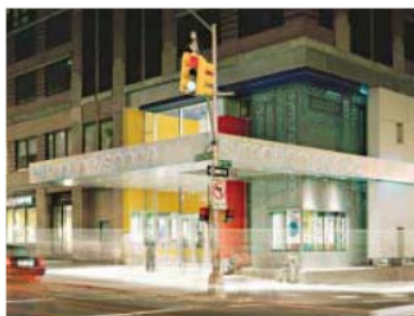
New York City's Symphony Space cultural center has updated its image in a marriage of architecture, graphics, and lighting. A new marquee is one signature of the renovation. Employing intersecting planes and bold colors, Polshek Partnership's "Rietveld on Upper Broadway" design is an homage to the De Stijl-inspired Dutch theaters of the 1920s. Fashioned from an aluminum panel with laser-cut lettering designed by Pentagram, the marquee is intersected at the corner by a column

inscribed with the names of performing arts disciplines.

Cline Bettridge Bernstein transformed Polshek's Modernist composition into a beacon. "We discovered that during the day, letters had to read dark because the front panel is lit only by daylight," explains principal lighting designer Stephen Bernstein. "At night, it's a play of opposites where the letters had to read as light on dark."

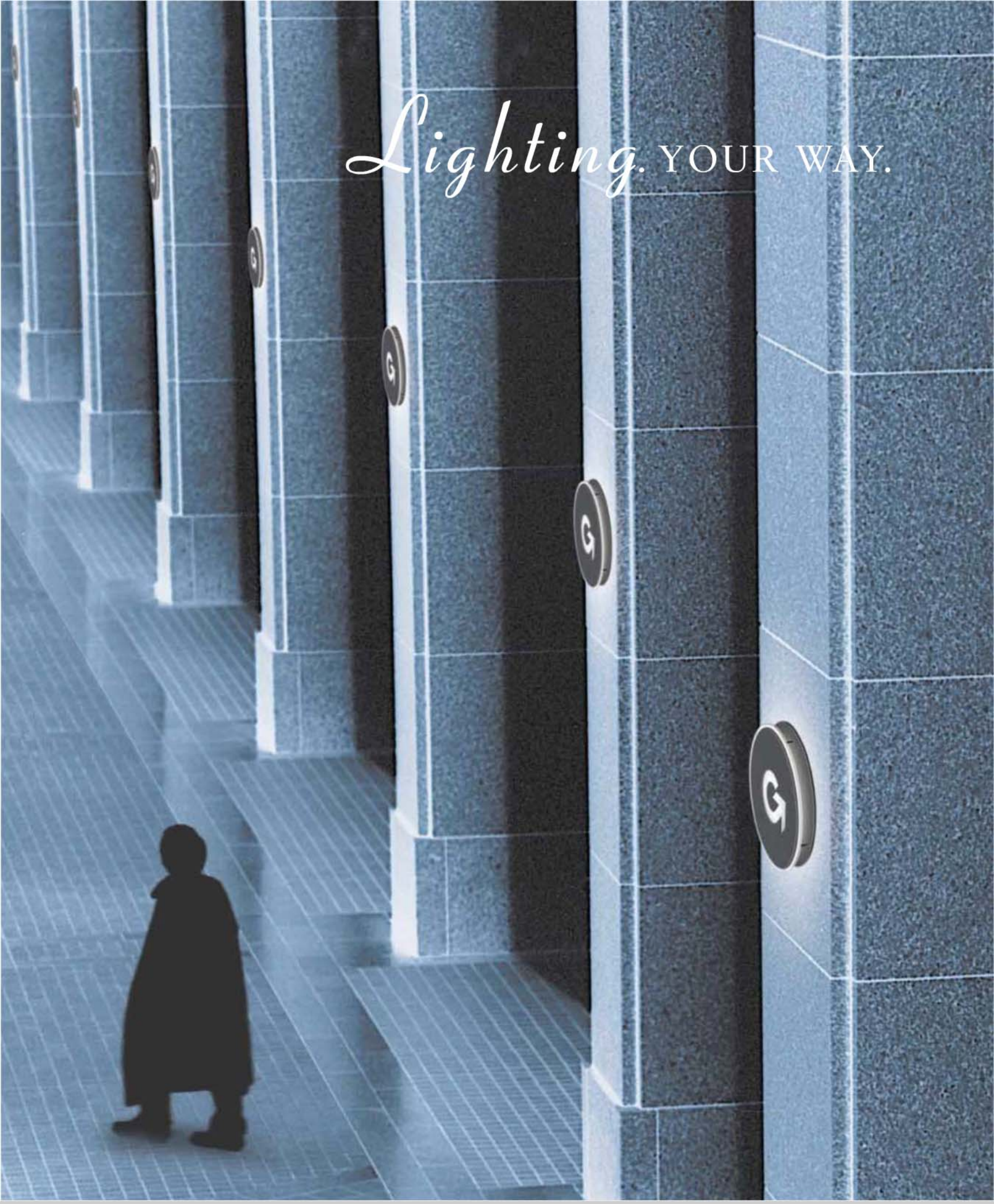
End-emitting fiber-

optic channels with metal-halide illuminators create the illusion of silhouetted letters. Fiber-optic channels also illuminate the text of the column, providing a consistent quality of light and color. L.B.F.



Backlit panels silhouette letters for a streamlined look at Symphony Space.

Lighting. YOUR WAY.





A new courtyard piazza beneath a glass roof gives the museum a central gathering place. At night, the museum is a lighted beacon in Salem, Mass. (opposite).

Moshe Safdie's expansion of the **Peabody Essex Museum** gives a community a light-filled cultural center



By Alice Liao

As America's oldest continuously operating museum, the Peabody Essex in Salem, Massachusetts, has built a considerable collection of Asian, African, and American artifacts, totaling 2.4 million pieces. Yet until recently, many of the treasures had never been publicly displayed. Last year, the museum resolved its exhibition-space dilemma with the opening of a 111,000-square-foot addition designed by Moshe Safdie and Associates. The new skylit galleries and transparent public areas nearly double the previous exhibition space and anchor an existing campus of 24 historic properties dating from the 18th and 19th centuries, including a Chinese merchant's house from the late Qing Dynasty recently showcased in the enhanced space. Working with Safdie, lighting design consultants Fisher Marantz Stone created a balance of daylight and electric lighting that complements the exhibitions and adds flexibility while enhancing the museum experience with a connection between indoors and out.

Part of a \$125 million, 250,000-square-foot renovation that brought unity to the 205-year-old institution and its surrounding neighborhood, the new wing embraces its older counterparts with an architecture reflective of the local community. Galleries are organized into what Safdie calls "houselike pavilions," whose rooflines and scale evoke

Salem's traditional residences. Brick and sandstone cladding recalls the museum's existing buildings. The addition adjoins the older buildings via an interior street and glass-enclosed courtyard that functions as a gathering and performance area. "We wanted to unify the old and new sections of the museum with a public space that was versatile," Safdie says. With arcs and curves hinting at Salem's nautical ancestry, the courtyard roof and glazing offer views of the sky during the day and establish visual ties with the outside world; aglow at night, they lend the museum presence. "The sense of being inside and outside was part of the lighting concept," says lighting principal Charles Stone.

The contouring of the glazing and courtyard roof, which was informed by studies of toroids, is achieved with the repetition of clear glass panes identical in size. Articulated with fluorescent cove lighting, the interior street, which extends from the front of the building to the back, serves as the glowing spine of the expanded facility, providing access to the new

Project: Peabody Essex Museum, Salem, Mass.

Architect: Moshe Safdie and Associates—Moshe Safdie, principal; Isaac Franco, Paul Gross, project managers; Michael Kim, project architect

Lighting designer: Fisher Marantz Stone—Charles Stone, principal; Hank Forrest, project manager

Structural, electrical engineer: Arup

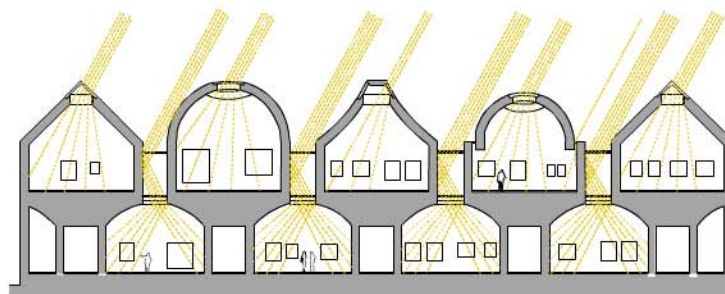
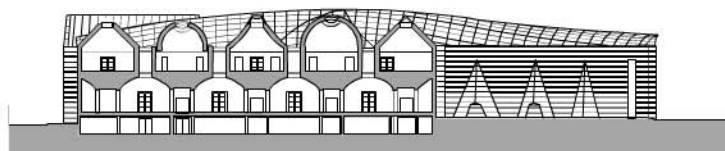
Electrical contractor: Griffin Electric

Alice Liao, a freelance writer and editor specializing in architectural lighting, is based in Teaneck, New Jersey.



The atrium is a central spine of the expanded museum, likened by executive director Dan Monroe as a “village green” (above and section, top right). Crucial to the museum

curators' wishes and Safdie's design is the introduction of daylight into the first- and second-floor galleries (lower section, and bottom right). Lay lights light galleries (right).



exhibition pavilions and leading to the courtyard and older galleries. Although partial glazing enables sunlight to penetrate the passageway, theatrical fixtures, mounted in groups along the apex of the ceiling, are separately switched to adjust for daylight shifts and nighttime functions that require lower light levels. The fixtures are lamped with 3200K ceramic-metal-halide sources, chosen for their color quality, and outfitted with a variety of lenses to direct light downward. Says project manager Hank Forrest, “The different lenses allowed us to use the same fixture and lamp throughout the spine, despite the fact that the cross section through the space varies considerably moving from one end to the other.”

In the courtyard, motorized shades control daylight via the simple operation of a push button. Resembling sails, the shades are critical for nighttime events where, if illuminated, they can eliminate the oppressiveness of a black sky. “Safdie coordinated the sails with a series of custom bar fixtures so that both uplight and downlight could be deployed to create a lantern effect visible from inside as well as outside,” says Stone. Suspended 2 feet below the sails, the 18-foot-long bars consist of adjustable PAR fixtures contained between tubes of uplights that accommodate track lighting for exhibitions. For performances, special events lighting is integrated into an upper-level arcade, while in the corridors flanking the courtyard, luminous disks mounted on walls give the illusion of expanded space. Incandescent sources are used throughout the



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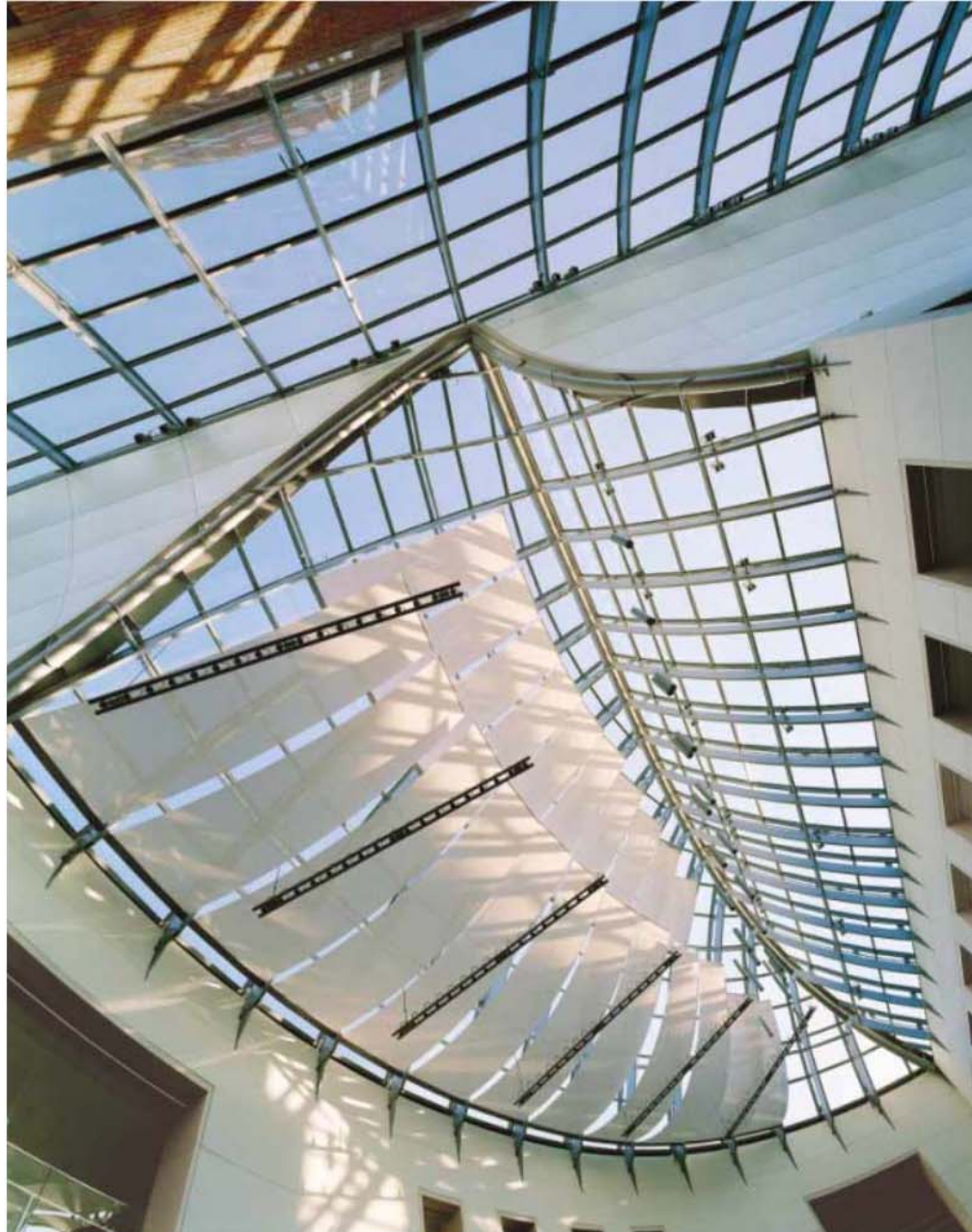
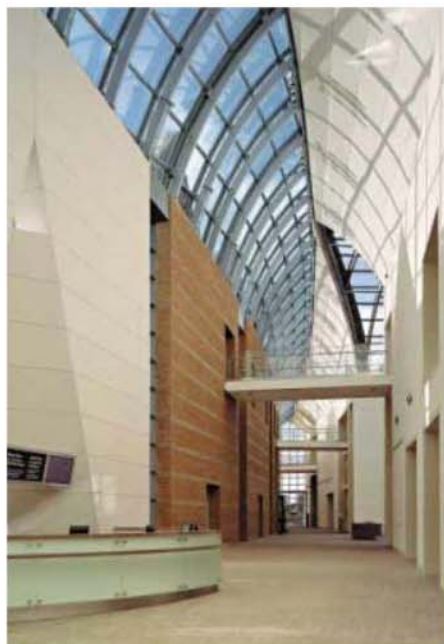


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www.aal.net/providence

A network of motorized shades, or sails, adjust light by shielding sunlight in the atrium. Custom bar fixtures are designed so that both downlights and uplights are deployed for a lantern effect at night and even illumination during the day.



courtyard to provide dimmability and ensure color consistency.

After dark, in-grade fixtures fitted with metal-halide sources uplight the exterior facade of the houselike pavilions to dramatic effect. During the day, the galleries, which are split between two floors, rely on lighting that can be adjusted according to fluctuations in daylight as well as the requirements of certain installations. Because the museum's collections run a broad gamut, the curatorial team required flexibility in

LINKING A DISPARATE COLLECTION OF AGING BUILDINGS WITH NEW HOUSELIKE WINGS, THE SPINE IS AWASH IN LIGHT.

locating artwork in each space, says Forrest. While upper floors receive daylight from skylights located at the top of each pavilion, ground-floor galleries are daylit by light shafts formed by painting the spaces between the houses white and equipping them with skylights and lay lights. All of the skylights can be closed off with scrolling shades and are combined with fluorescent illumination and track lighting to supply ample ambient light and flexibility.

Other highlights of the project include a 190-seat auditorium

where incandescent striplights, hidden behind a wood lattice, make the walls appear to glow. Above, concealed wall washers bathe the ceiling in white light.

One of the fastest-growing museums in the country, Peabody Essex has increased its operating budget from \$4 million to \$12 million in just over seven years, while the endowment grew from \$23 million to more than \$80 million. Although it barely rises above its neighboring buildings, the rejuvenated Peabody Essex is a new axis for the community, both culturally and architecturally. Like the bounty of traders that began the collection two centuries ago, the museum's forms and interiors, augmented by a subtle balance of light, are captivating yet somehow familiar. ■

Sources

Lighting track and downlights:
Edison Price

Custom pendant fixtures: *Cole Lighting*

Fluorescent cove uplights:
Elliptipar

Downlights: *Times Square Lighting*

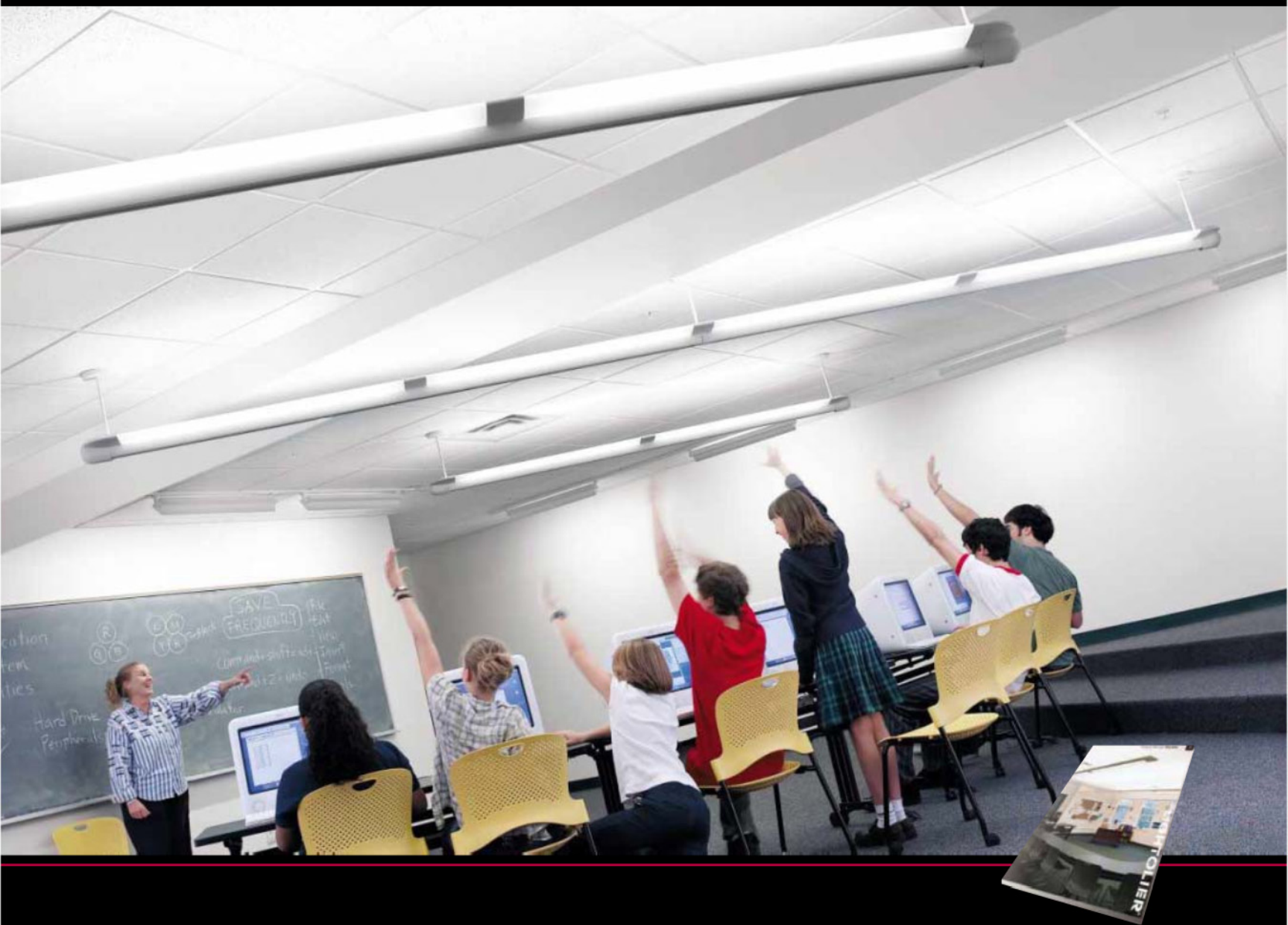
Exterior uplights: *Hydrel*

Dimming system: *Lutron*

For more information on this project, go to Projects at

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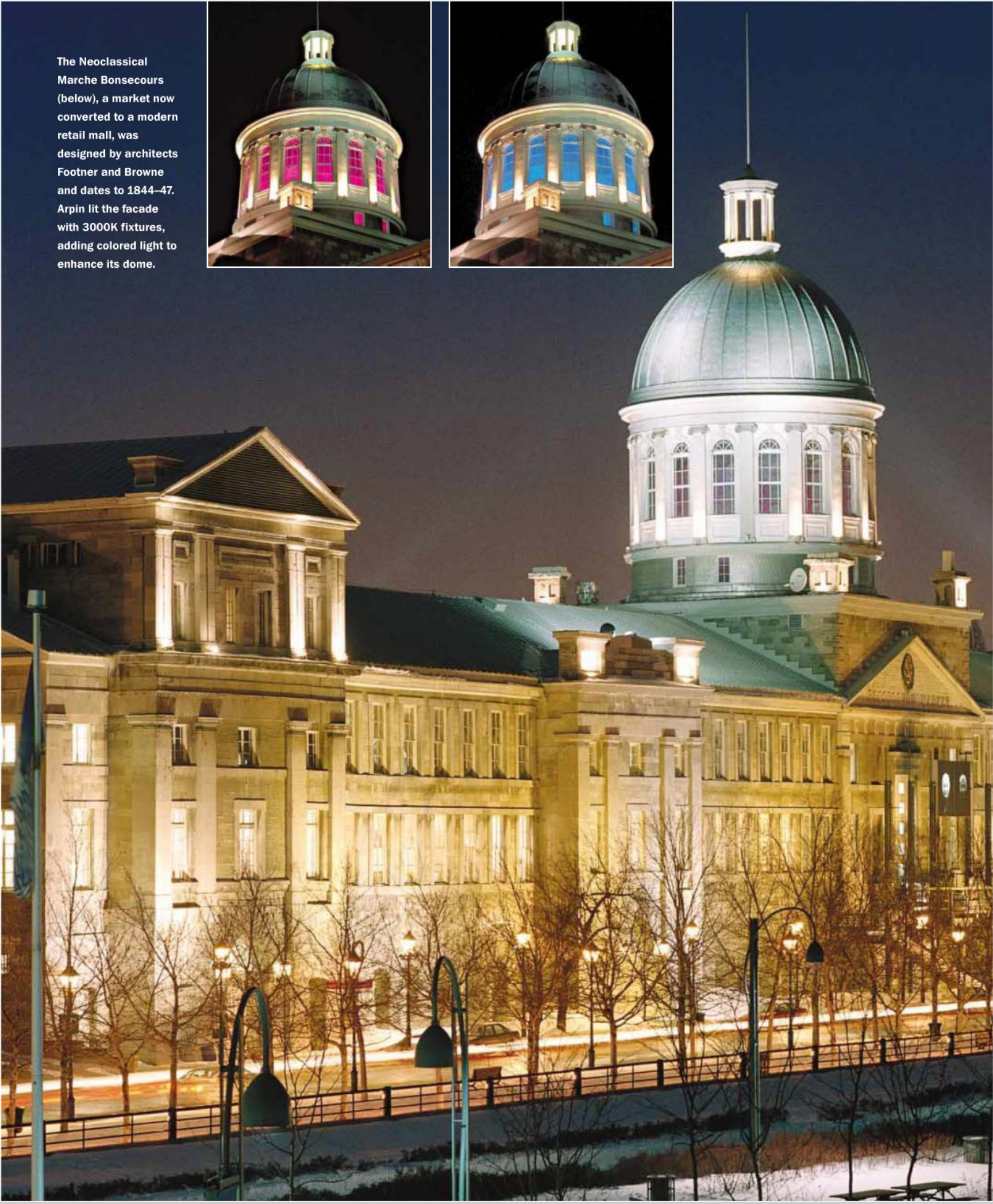
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The Neoclassical Marche Bonsecours (below), a market now converted to a modern retail mall, was designed by architects Footner and Browne and dates to 1844–47. Arpin lit the facade with 3000K fixtures, adding colored light to enhance its dome.



A leading design light of Montreal, **Gilles Arpin** has raised the profile of the city's landmark buildings

By William Weathersby, Jr.

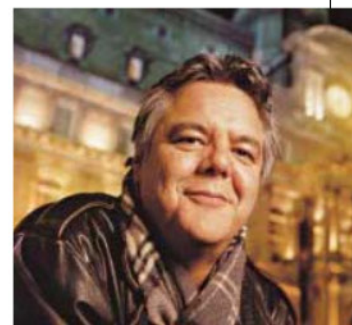
Montreal lighting designer Gilles Arpin made a transfer from the world of theater to illuminating the buildings he loves in his native city. For more than two decades he worked as a head electrician, lighting director and designer, and production manager for opera, ballet, and musical performances, from Broadway-style shows to rock and roll extravaganzas. On world tours, he grew passionate about the cities to which he traveled, getting a crash course in design along the way by studying with leading lighting designers and scenographers: masters such as Nicholas Cernovitch in New York, Roberto Oswald in Argentina, Joseph Svoboda in Prague, and Michel Beaulieu in Montreal. Arpin's travels sparked a passion for canvassing the architectural particularity of each city he visited, leading him to study urbanism for two years. Now, after spending most of the 1990s experimenting with lighting equipment and championing the results to be had by upgrading civic exterior illumination, he finds himself in a leading role, changing the face of Montreal's nighttime look. He's also made friends among the city's civic administrators, who now seek his advice and expertise to enliven the darkened facades of buildings in their charge.

"Urban lighting design is not only a matter of ornamentation," Arpin says, "but also a way to appeal to our community in the progressive search for better safety, comfort, and ambience. Everybody is familiar with lighting, and no one would take pleasure under horrible lighting in their home. Why endure it in outdoor nightlife?"

Founding his own firm, *éclairagepublic* (which translates as "public lighting"), in 1996, Arpin has since won commissions to literally cast a new light on the multicultural and historic tissue of Montreal. For the past decade, the city of Montreal administration and the Ministry of Culture and Communications of the Province of Quebec have enlisted Arpin and his architectural and landscape design colleagues to sustain and upgrade the urban design, pedestrian profile, and lifestyle/entertainment options of the historic district known as Old Montreal.

In that urban sector alone, Arpin has lit the City Hall, the Christ-Church Cathedral, the Place Jacques-Cartier, and the Place d'Armes. Venturing indoors, Arpin enhanced the multiuse Complex Les Ailes, with lighting that adapts to the various uses of the site.

Arpin's approach is both subjective and technical. He says he



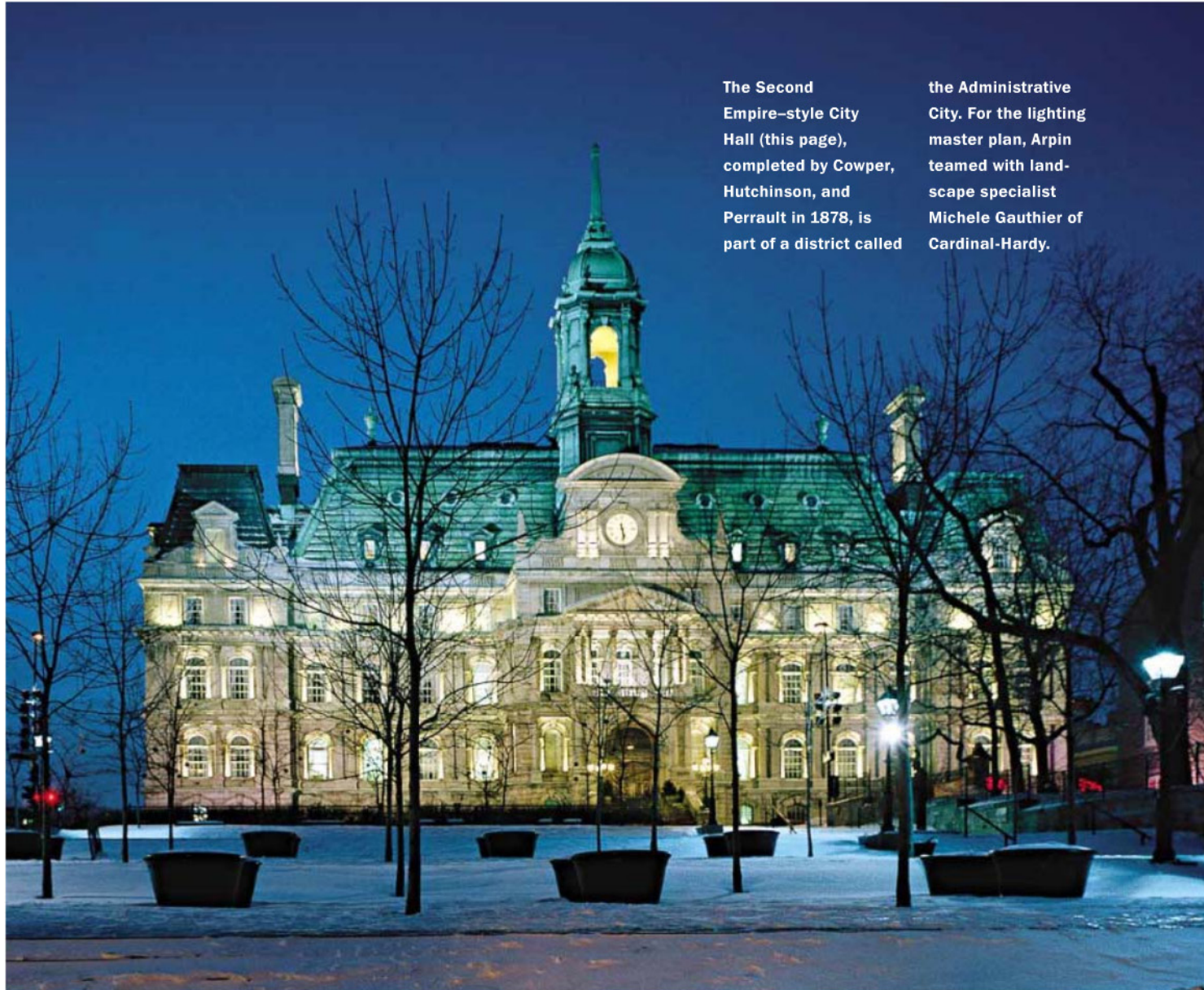
Experience in urbanism and theater inform Arpin's eye.



PHOTOGRAPHY: © MARK CRAMER, EXCEPT LE PHOTOGRAPHE MASQUE (OPPOSITE, INSETS); ERIC BARBEAU (PORTRAIT)

The Second Empire-style City Hall (this page), completed by Cowper, Hutchinson, and Perrault in 1878, is part of a district called

the Administrative City. For the lighting master plan, Arpin teamed with landscape specialist Michele Gauthier of Cardinal-Hardy.



sees his role as keeping the focus on proposing straightforward and easily achieved solutions, with minimal maintenance requirements. When he considers an elevation—or even the panoramic sweep of an entire district of buildings, such as the Administrative City—the designer refines the classical use of light in dealing with volumes and details. “Lighting has typically been associated with basic function and security,” he says. “Our approach tends to recognize light as a planning element that is an integral part of the overall design.”

THREE CITY-PLANNING ADMINISTRATORS SUPPORTED THE GRAND SCALE OF ARPIN’S LIGHTING PLAN FOR OLD MONTREAL.

For a busy designer who seems to have carte blanche and the insider’s track to make Montreal synonymous with civic lighting, Arpin is quick to acknowledge his relative newcomer status in the architectural section of the field, crediting other lighting designers as touchstones for inspiration. “In the world of contemporary lighting design, I admire the work of Motoko Ishii, Speirs and Major, and Louis Clair, for the versatility of their projects,” Arpin comments. “I like very much the richness and the precision of Paul Gregory’s work, as well, and I pay tribute to William Lam and Roger Narboni for what they published [in educational texts].”





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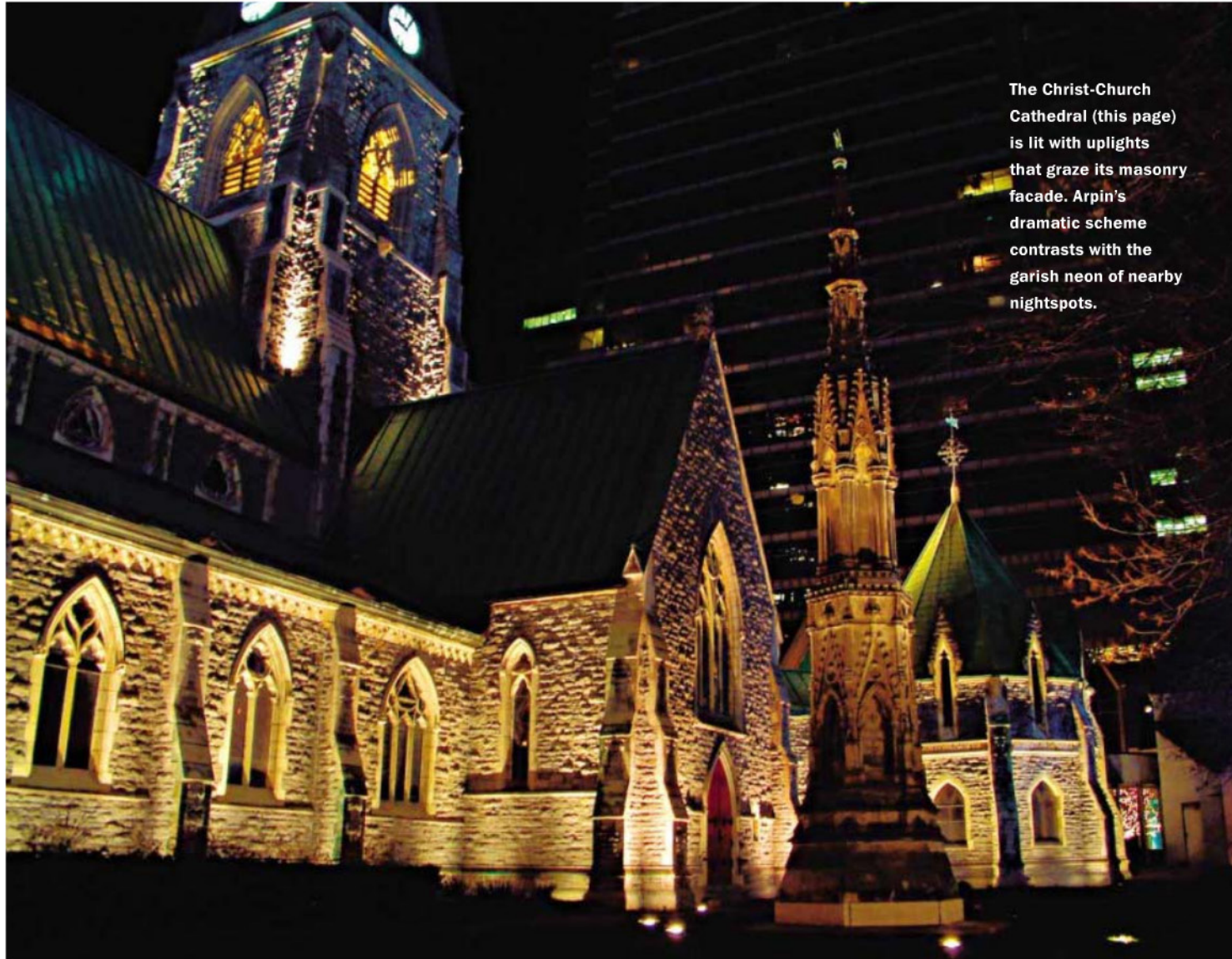
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The Christ-Church Cathedral (this page) is lit with uplights that graze its masonry facade. Arpin's dramatic scheme contrasts with the garish neon of nearby nightspots.

Arpin says his lighting compositions are also inspired by art, “Courbet, Vermeer, and other artists, for the treatment of light in their paintings,” he says. The conceptual and architectural underpinnings of works by Christo, Jeanne Claude, and James Turrell also inspire his designs. In a lighting-plan study for the Canal de Lachine, for example, a route that begins with the Old Harbor of Montreal and goes up to the Côte-Saint-Paul Bridge, Arpin selected seven key objects, from footbridges to towering old trees, that he washed with color. The resulting presentation collage is like a walk through an extraordinary sculpture garden.

“Our lighting design work and recent research drives us to conceive light scenographies that contribute to the development of human relationships in urban spaces,” the designer says. His lighting designs strive to reflect, and to bring out all the colors of, the human conditions held within each urban environment. Arpin’s motto is: “Lighting should enhance convivial relationships by revealing the beauty of cities.” ■

Sources

Asymmetrical projectors: *Insight Lighting*

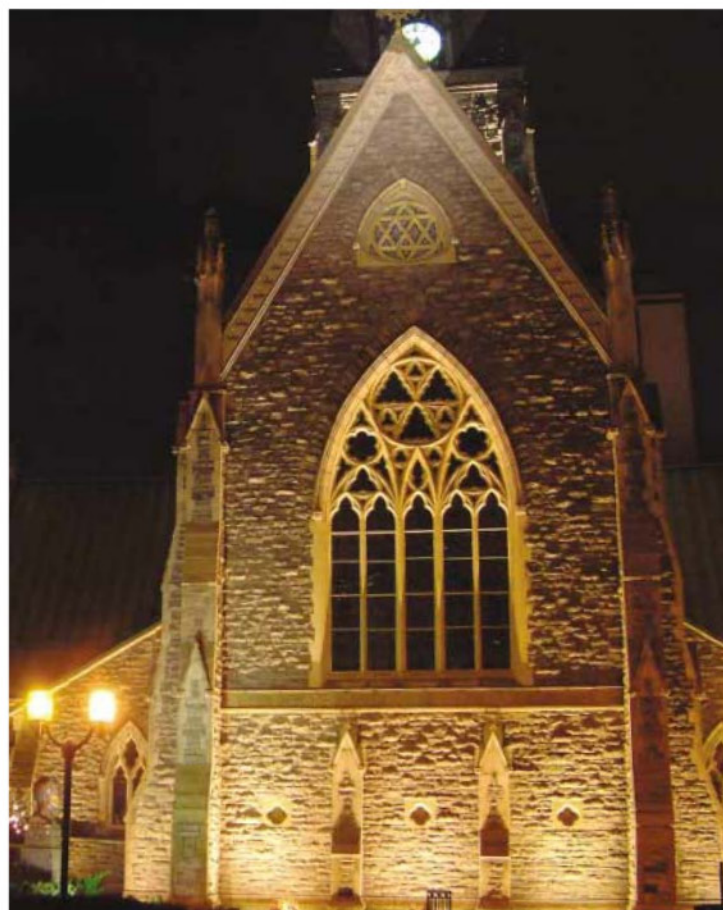
Asymmetrical vertical projector: *Sill*

Asymmetrical intensive projector: *Sill; Cyclone; Design Plan; We-ef*

Rectangular extensive projector: *Lithonia*

Street-post lantern with hidden projector: *LUMEC*
Custom fixture: *LUMID*

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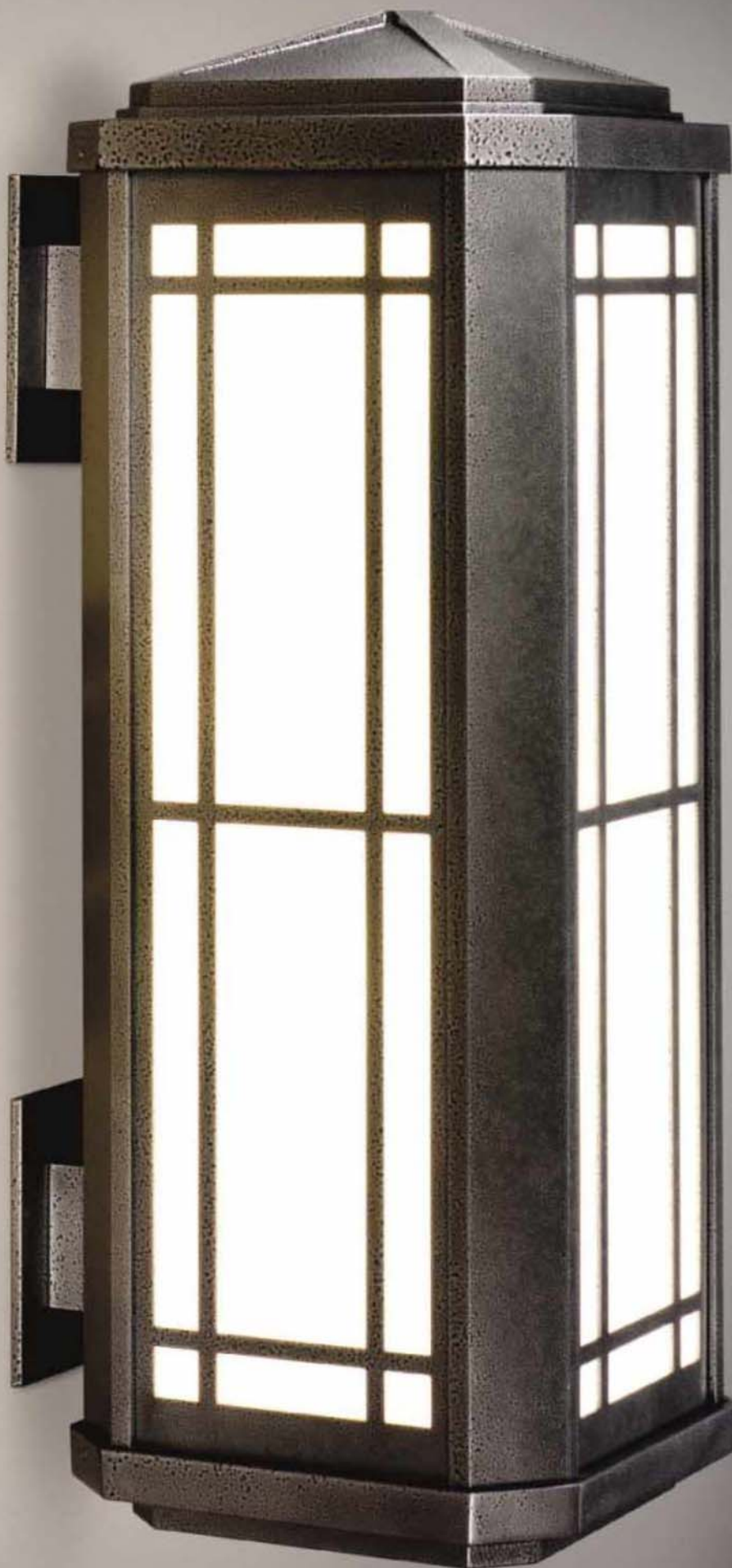
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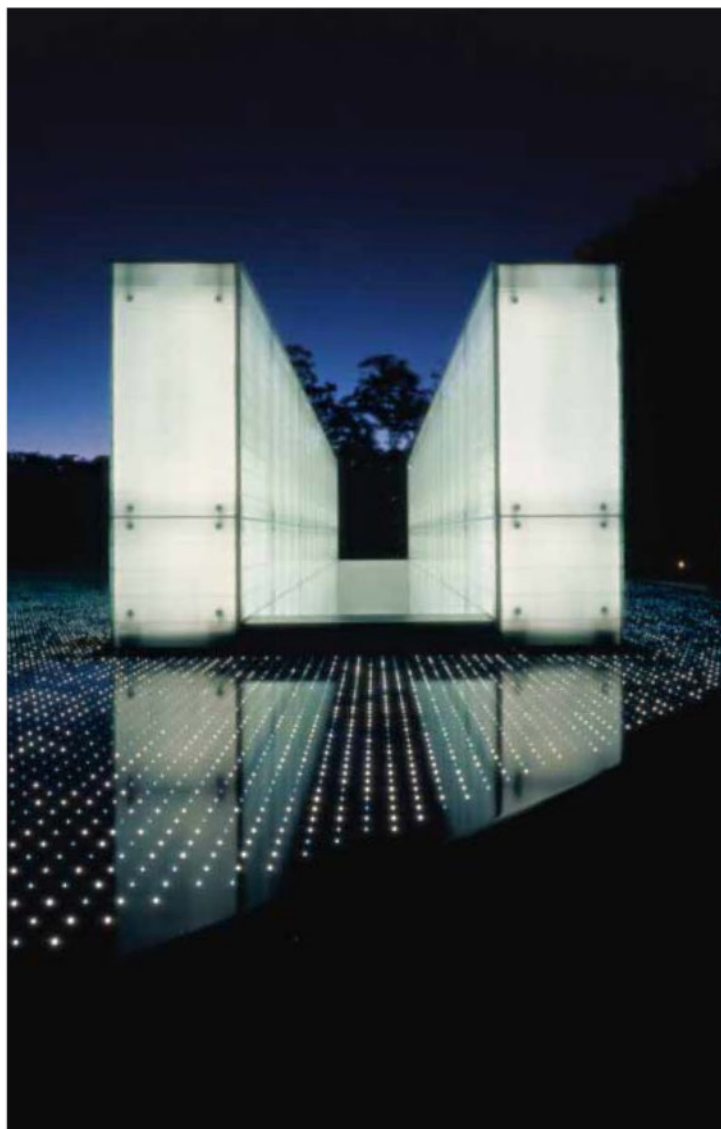
Bearing witness to the victims of the atomic bomb, the **Nagasaki Peace Memorial** embraces water and light

By Alice Laio

In an expression of condolence by the Japanese government to the families affected by the bombing of Nagasaki and Hiroshima, memorial halls were recently opened in the two cities to allow citizens to pay their respects to the victims and to promote local and international exchange on issues relating to the atomic bomb and radiation illnesses. At the Nagasaki National Peace Memorial Hall for the Atomic Bomb Victims, which was designed by architect Akira Kuryu, visitors are invited to pray in a calm, sanctuarylike environment that incorporates architectural elements resonant of the past and a lighting scheme that sets a calming emotional pitch. The Japanese firm Lighting Planners Associates collaborated with Kuryu in creating a lighting solution that not only articulates the facility's role in the community and enhances the atmosphere of serenity, but also amplifies the Memorial Hall's message of remembrance and peace.

Erected on a site 820 feet away from the hypocenter of the bomb, the building consists of three levels: an exterior plaza with a sculpted basin on the ground floor and two subterranean levels devoted to prayer and the display of information and archival materials. Kuryu takes advantage of this close proximity to include symbolic features that heighten the visitor's experience. In the exterior plaza, a pair of glass walls internally lit with light pipes form a corridor oriented toward the hypocenter. The walls appear to rise from a sculpted basin conceived as an offering to the souls of victims. Since much of the population exposed to the bombing experienced extreme thirst, the basin overflows with water. The floor of the basin is embedded with 70,000 fiber-optic points of light to represent the number of Japanese who died in the aftermath by the end of 1945. Several mock-ups were conducted to pinpoint the spacing and alignment of the fiber-optic fixtures as well as the location of the illuminators. The fibers are lit with 52 150-watt ceramic-metal-halide lamps, which are concealed in the landscaping that borders the basin. According to lighting design principal Kaoru Mende, "Precision was critical in ensuring that a uniform brightness was achieved across the basin."

Although minimizing the disruption to a neighborhood largely comprising low-standing residences, Kuryu says locating the majority of the facility below grade was critical for fostering an atmosphere conducive to quiet prayer. The discreet illumination of circulation routes recommended by the Memorial Hall staff was equally important in maintaining spatial and emotional continuity. To access the interior spaces, visitors descend a flight of stairs lit with fluorescent striplights integrated into the handrail and downlights recessed in the ceiling. In



Illuminating the sculpted basin, which measures 98 feet in diameter and 2 inches in depth, fiber-optic fixtures are strategi-

cally spaced 1.5 inches apart to ensure consistency in brightness and easy access to illuminators for maintenance.

Project: Nagasaki National Peace Memorial Hall for the Atomic Bomb Victims

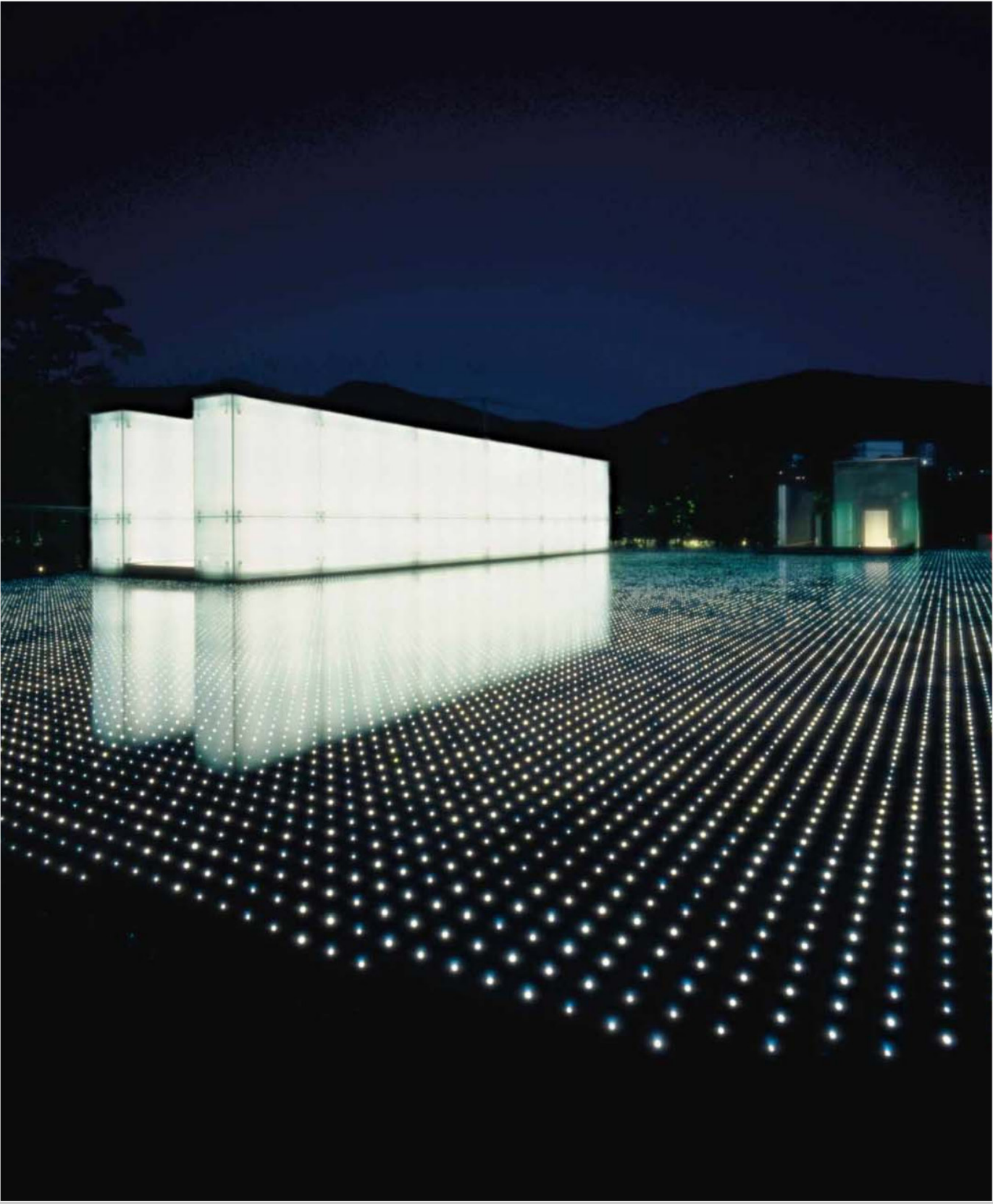
Architect: Akira Kuryu

Lighting designer: Lighting Planners

Associates—Kaoru Mende, lighting design principal

Structural designer: TIS & Partners

Landscape architect: Placemedia

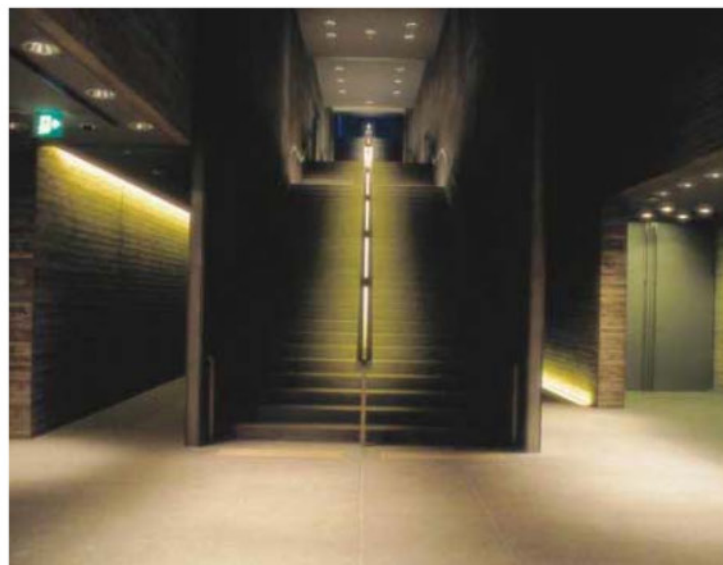




Visitors to the Memorial Hall are directed along suggested routes indirectly illuminated with fixtures concealed in ceiling and floor slots (below). In lighting the

columns and the sculptural walls above ground (top and bottom left), the designers selected a glass cladding that was transparent enough to

ensure uniform illumination yet opaque enough to conceal structural elements and fixtures. Both are lit with 4000K metal-halide sources.



corridors and throughout other spaces, walls are indirectly illuminated to provide ample ambient light while preserving the meditative quality of the architecture.

At the heart of the facility is the Remembrance Hall, a central space for prayer where two rows of six columns flank a corridor that leads to a registry shelf containing books of victims' names. The 29.5-foot-high columns extend the full height of the space, visually joining the walls in the basin above, and are similarly aligned in the direction of the hypocenter. During the day, a skylight situated between the exte-

LIT BY METAL HALIDES, COLUMNS SOAR. PLANES OF TWINKLING LIGHTS EVOKE THE "FLOATING SOULS" OF THE DEAD.

rior walls and over the corridor opens onto a view of the sky where the bomb exploded and allows daylight to penetrate the space. Adds Kuryu, "As visitors look up from this space of mourning, we wanted them also to experience through changes in daylight the passage of time." At night, equipped with light pipes lamped with 150-watt ceramic-metal-halide sources, the columns soar beyond the ceiling plane to become one with the exterior walls. Surrounded by twinkling lights, which Kuryu likens to the "floating souls" of the dead, the luminous forms represent the Nagasaki National Peace Memorial Hall's plea for peace. ■

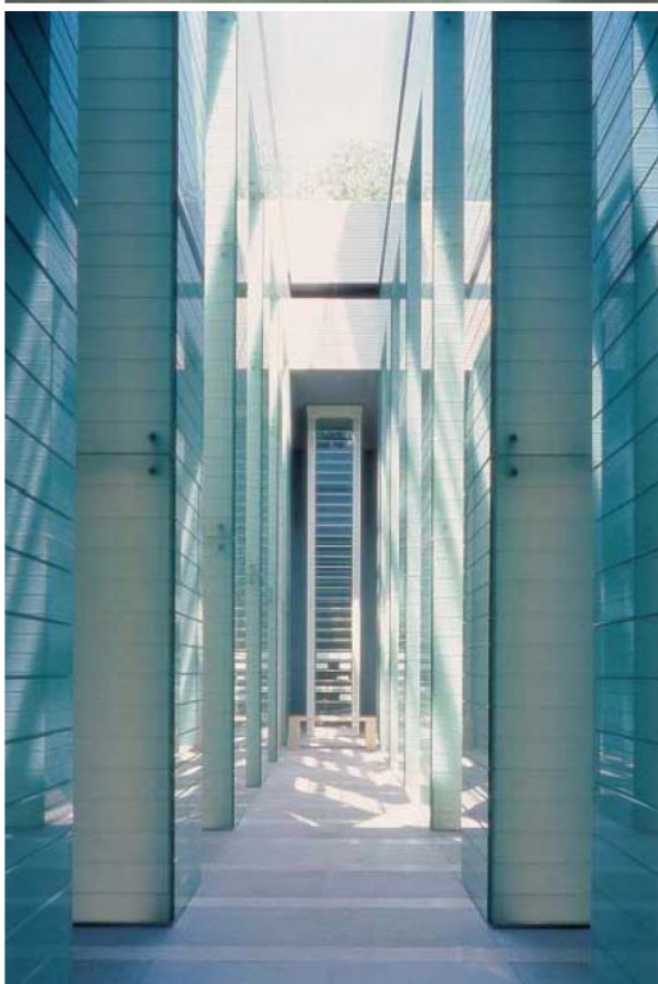
Sources

Optical fiber lamp: Ryoko

Light pipes: Matsushita Electric Works (in basin); Yamada Shomei Lighting (light wall)

Flow-line light: Nippo Electric

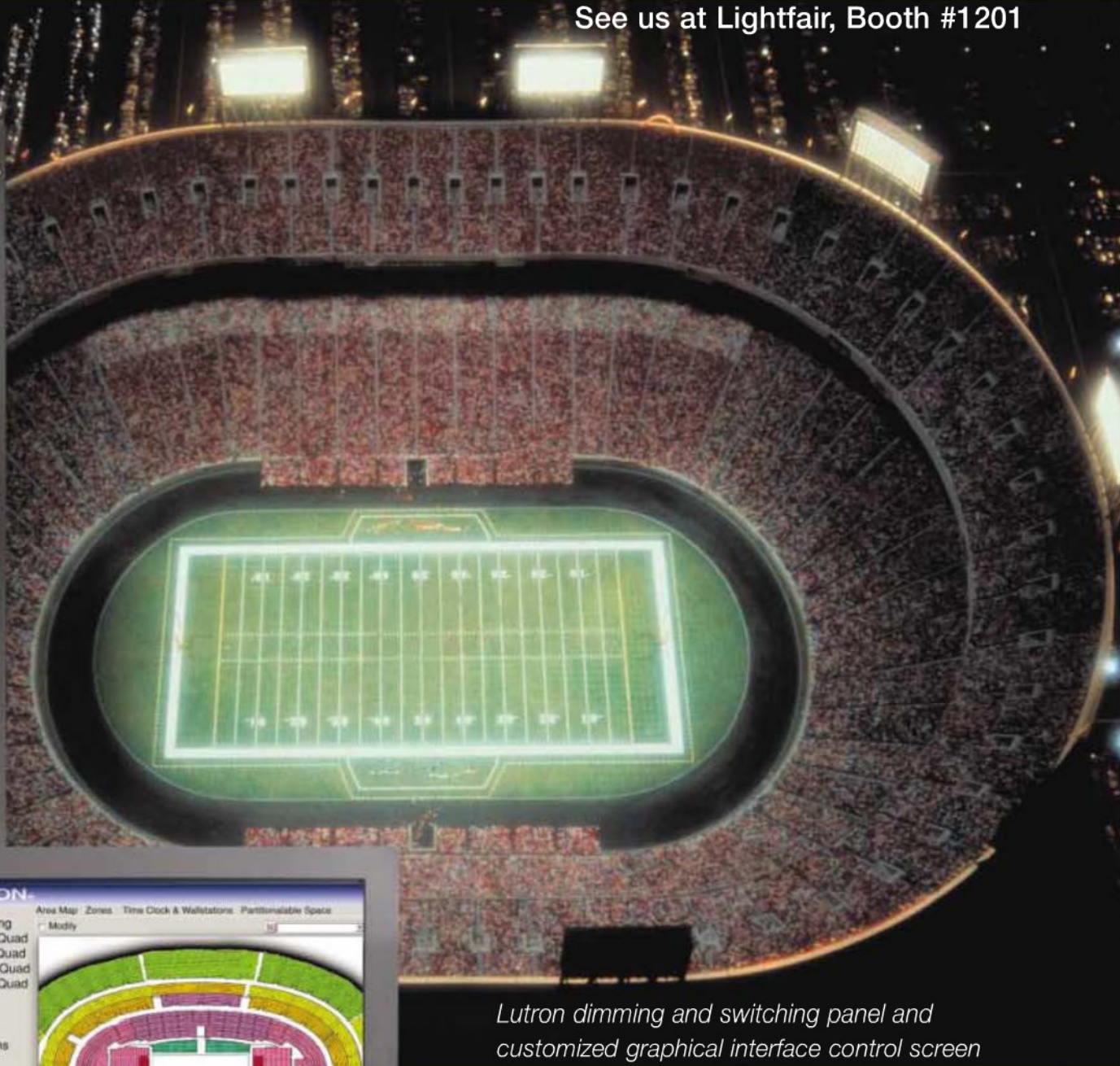
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Lighting Briefs

▼ Odor-busting bulb

Technical Consumer Products (TCP) claims their new compact fluorescent light bulb (below) eliminates odors from the air. This occurs when a special coating on the glass is exposed to fluorescent light and the photocatalytic reaction creates strong oxidizers that break down odors. TCP has also introduced the 289 series compact fluorescent lamp, the smallest CFL on the market, according to the manufacturer. TCP, Aurora, Ohio. www.tcpi.com

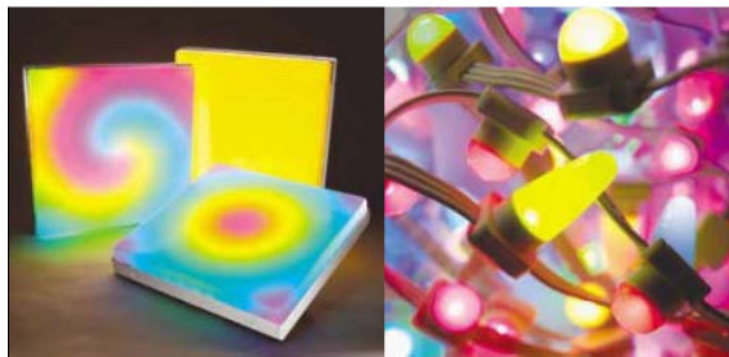
CIRCLE 200



▲ Leather-bound luminaire

Bound in leather like classical works of literature, the Library Collection consists of two sconces, a table lamp, and a floor lamp. Suitable to residential, executive, hospitality, and institutional settings, the lamp is designed by Eric Brand, who has developed interior retail concepts for Chanel, Giorgio Armani, Coach, and others. Boyd Lighting Company, San Francisco. www.boydlighting.com

CIRCLE 202



▲ Wildly colorful LED options

New from Color Kinetics, the iColor Tile FX (top left) works independently or as part of a large-scale, multitile installation. Each 2' x 2' panel incorporates 144 individually addressable tricolor nodes that are powered to create images with light. iColor Flex SL (top right) is a multipurpose LED-based strand, composed of 50 individually addressable tricolor nodes, that is available as an independent system or as a component for custom fixtures. Color Kinetics, Boston. www.colorkinetics.com



▲ Hitting on all cylinders

The Otto family of architectural fixtures is offered in several single- and four-cylinder models, including a single ceiling, single drop, four drop, single ADA wall (left), and four ceiling model (right). The hardware on all Otto models is clear anodized aluminum, and the fixtures use 13-watt compact fluorescent lamps and electronic "smart" ballasts. Special attention is taken in both blowing and coldworking the glass to achieve the Otto shade's shape. Resolute, Seattle, Wash. www.resoluteusa.com

CIRCLE 203



▲ Another take on the bedside lamp

With the new Take Lamp, Kartell has interpreted the image of the classic bedside lamp in transparent or opaque polycarbonate. Kartell's clever design twist is that the shape seems to emerge from two facing sheets of polycarbonate, while a polycarbonate injection process allows for the clear delineation of the inner pleating of the lamp shape, giving a rich crystalline effect. Seven transparent shades and two solid colors are available. Kartell US, New York City. www.kartellus.com

CIRCLE 204



▲ Singular dimming module

The Bak Pak IGBT dimming module mounts wherever a need exists for a

single dimmer, eliminating the need for additional rack space. The Bak Pak dimmer weighs less than 2 pounds and mounts directly to existing stage lights, structures, or walls without special brackets or construction. Every dimmer has an onboard, intelligent processor that adjusts and

maintains proper voltage and current. Entertainment Technology, Dallas. www.etchedimming.com

CIRCLE 205

Lighting Briefs



▲ Good design at arm's length

Interior designer Peter Carlson created CL Sterling & Son lighting in response to what he saw as a lack of options and suitable products on the market. Carlson's contemporary lighting includes the 6 Arm Chandelier (left) and Silhouette Sconce (right) from the Archer Collection. Both fixtures are available in polished chrome, polished nickel, brushed nickel, architectural bronze, and brushed brass, as well as custom finishes. The chandelier is also available with four or eight arms, uses a 60-watt candelabra bulb, and features frosted glass shades. CL Sterling & Son, Lyme, Conn. www.clsterling.com **CIRCLE 206**



▼ Smaller family member

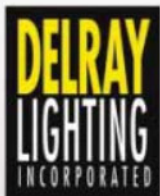
The ADA-compliant Aliante Demi-Sconce is designed to complement the full 4' and 5' tall sconces and pendants of the original Aliante family. Available in the same anodized and premium painted finishes, the sconce has been designed for either incandescent or 26-, 32-, or 42-watt compact fluorescent lamps in the 21" tall size and 42-watt lamps in the 27" tall size. Ivalo Lighting, Willow Grove, Pa. www.ivalighting.com **CIRCLE 207**



▲ Built-in night light

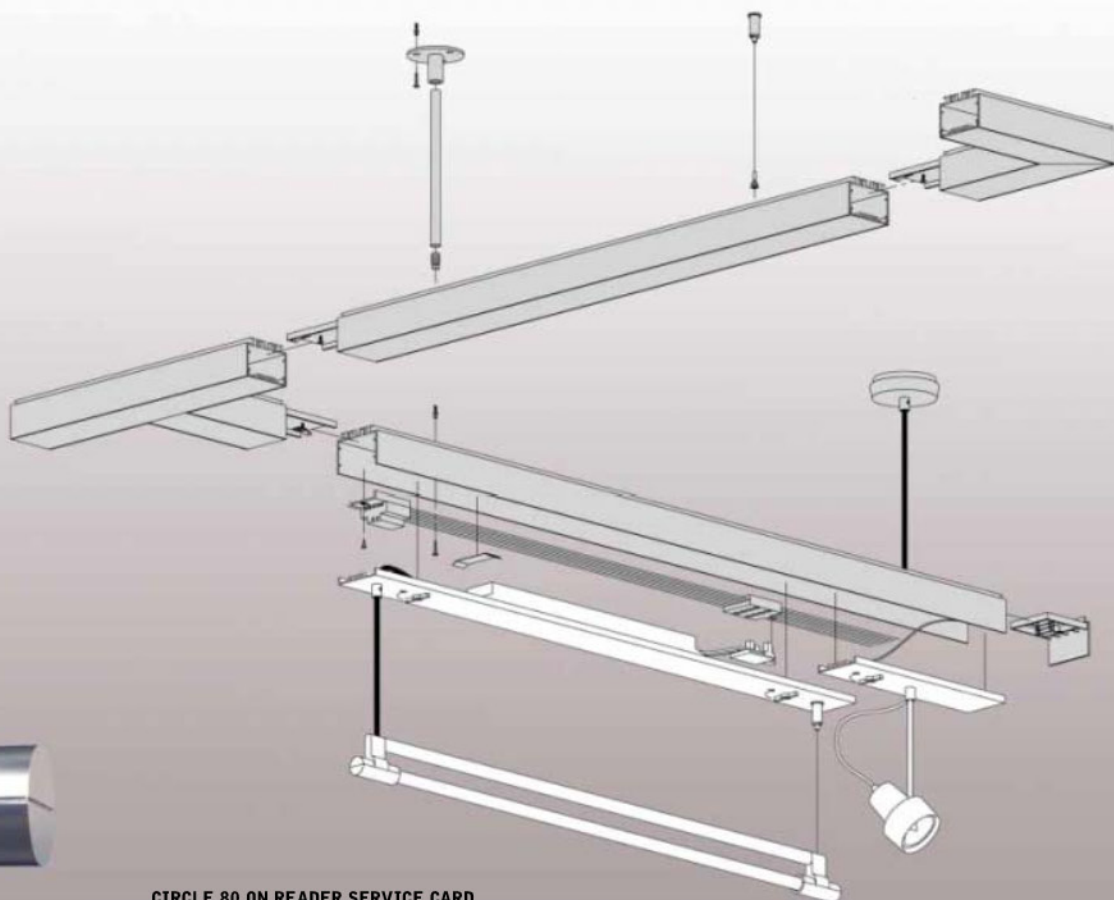
The Quattro collection of sconce lights, mirrors, and bathroom accessories is available from the Ginger Design Group. The single sconce light has a night light in the bottom shade that can be operated independently of the main light by providing a separate hot wire and switch to the fixture. The collection will be offered in polished chrome and satin nickel. Ginger Design Group, Fort Mill, S.C. www.gingerco.com **CIRCLE 208**

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Lighting Briefs

► Linear fluorescent tubes

Waldmann has launched a series of luminaires to the U.S., including RL Architectural linear fluorescent tubular lighting (right). The line is constructed with impact-resistant polycarbonate tubes and is ideal for indoor or outdoor locations, including train stations, airports, and parks. A variety of mounting brackets and suspension devices are available for both ceiling and direct wall mounting. Waldmann Lighting, Wheeling, Ill. www.waldmannlighting.com **CIRCLE 211**



◄ Table for two

The Spun Light (left), designed by Sebastian Wrong for Flos, features a diffuser screen of sandblasted pressed glass positioned at the top of a spun-metal diffuser. Spun is available as a table fixture in two sizes and four color combinations. Also new from Flos is Philippe Starck's Miss K table lamp, featuring a transparent polycarbonate diffuser finished with a high vacuum aluminum process. Flos USA, Huntington Station, N.Y. www.flos.net **CIRCLE 210**

▼ Traditional-style fixture

The new Providence period-style fixture from Architectural Area Lighting utilizes efficient lamp sources and electronic ballast options for longer lamp life and color correction. Optical systems include vertical and horizontal reflectors, as well as an indirect version for even, glare-free illumination. Emergency and egress lighting options are available for code compliance. Architectural Area Lighting, La Mirada, Calif. www.aal.net **CIRCLE 209**

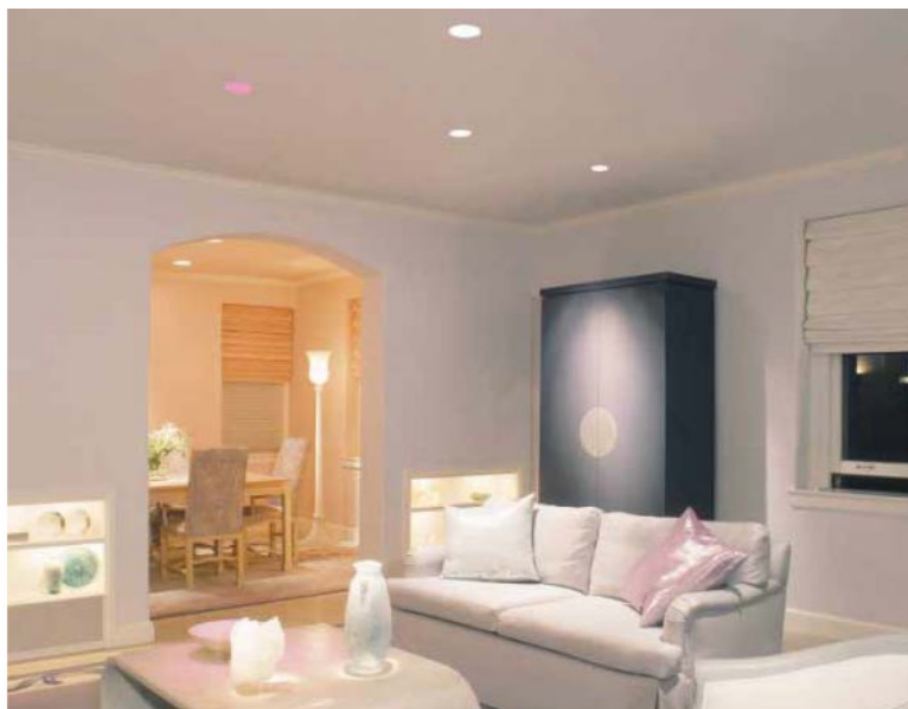


▲ Diffused ambient lighting

The Encore ADA-compliant decorative wall sconce was designed by Peter Wooding, AIA, of Peter Wooding Design Associates. The sconces are characterized by tall, vertically oriented, cylindrical glass shades, framed by solid brass wall brackets. A choice of translucent acrylic or Imago rigid resinized fabric lens options is available. Nessen Lighting, Mamaroneck, N.Y. www.nessenlighting.com **CIRCLE 212**

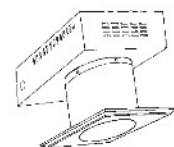
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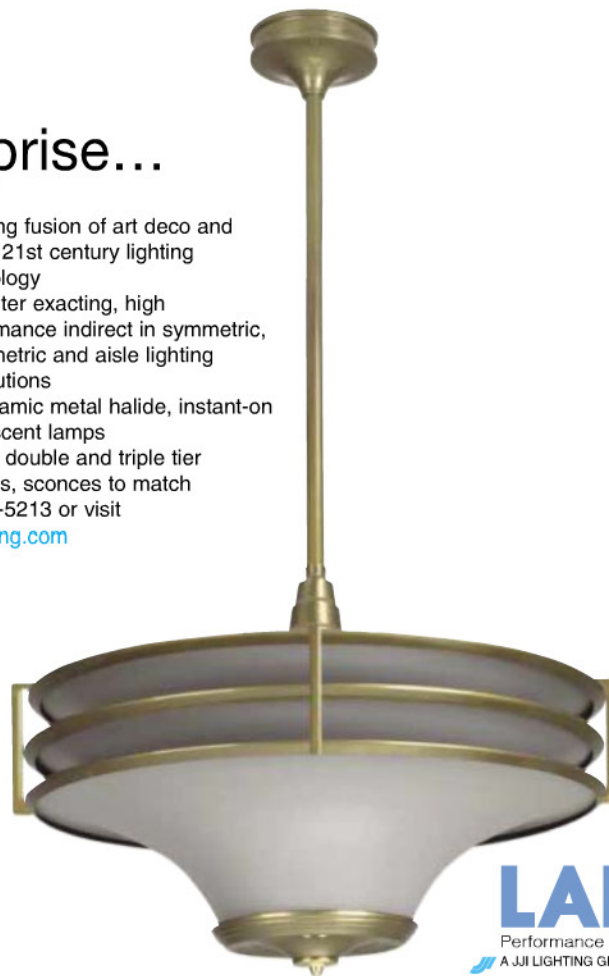
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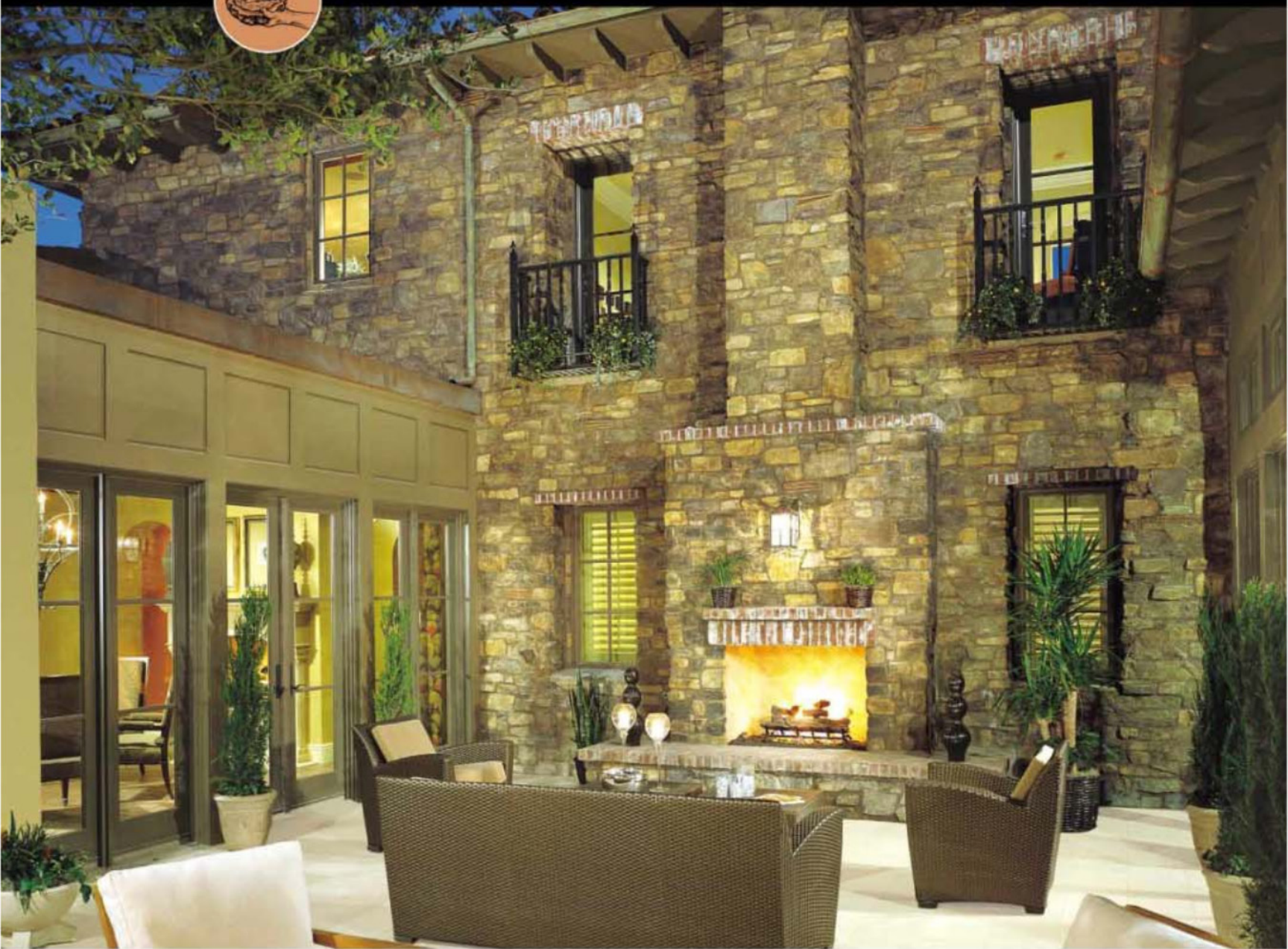
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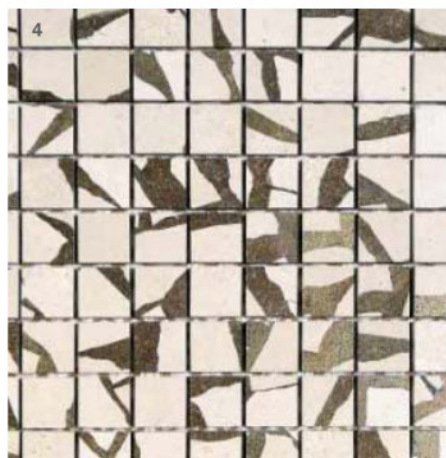
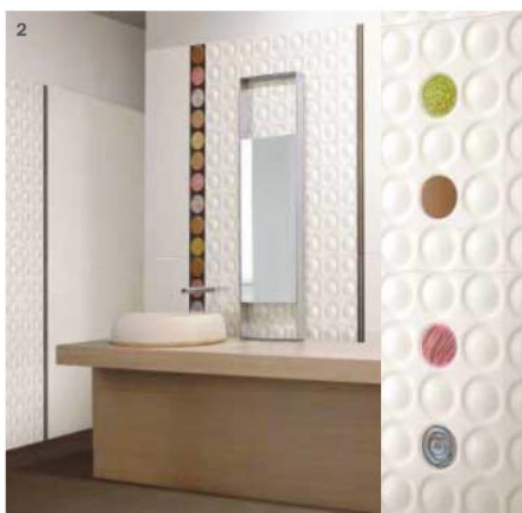
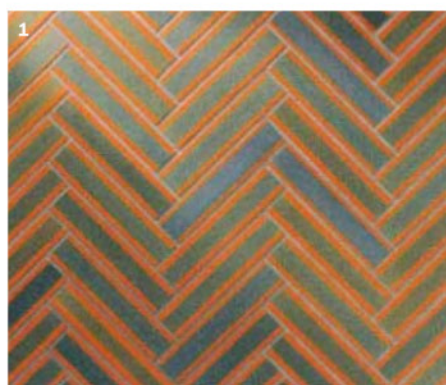


Products

Tile, Stone & Concrete

This month's focus on **tile, stone & concrete** includes the review of a trend-setting tile show held annually in Italy, featured below. Improved concrete casting methods, a **proposal for greener cement**, and stone mosaics and ceramic tiles inspired by retro or ancient looks, are also of note. *Rita F. Catinella*

"When you consider the size of a country like Italy relative to the U.S., the sheer number of Italian tile manufacturers is astounding," says architect Katherine Chia, of New York City-based Desai/Chia Studio. Chia, a former *RECORD* Product Reports juror who attended the Cersaie exhibition of ceramic tiles and bathroom furnishings last year in Bologna, noted some dominant themes at the show, including tiles that imitate stone, concrete, and wide-plank wood flooring; morph into 3D shapes or mod '50s designs; feature funky color combinations; combine different materials (including glass and metal); and work as an exterior facade material. "Cersaie offers U.S. architects a tremendous resource in the tile market," adds Chia. "The benefit of attending the show is the ability to see and touch the material for yourself—there are subtle details in many products that can't be captured accurately in a photograph." Below are a few of her finds from the show. For more information about Cersaie, check out www.italiatile.com. —R.F.C.



Terra-cotta, ceramic, metal, stone mosaics—a range of materials for an architect's tile palette

1. When thick terra-cotta pieces are fired, oxygen does not reach the center, leaving that part the natural gray of the original clay. Vertically cut, the tile features a gray surface and terra-cotta-colored striping on its edges. Named Terra Serena, this listello is designed for finishing and decorative applications in outdoor or indoor areas. EX: Incorporated, New York City. www.exinc.org **CIRCLE 213**

2. and 3. The Esprit Nouveau collection from Viva Ceramica has a mod '50s attitude, including two types of dimpled white base tile that can be fitted with wildly patterned inserts. Sucré Salé, also from the collection, features an egg-shaped pattern floating on boldly colored backgrounds. Viva Ceramica, Hastings Tile & Il Bagno Collection, Freeport, N.Y. www.hastingstilebath.com **CIRCLE 214**

4. Arhea, a partner with Bi Marmi, offers the Textures Collection in materials ranging from stainless steel to marble. Shown above are Medmoma tiles combining white marble and bronze. Bi Marmi, Bisceglie, Italy. www.bimarmi.it **CIRCLE 215**

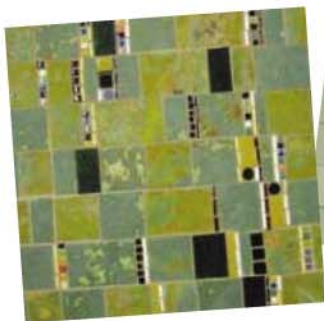
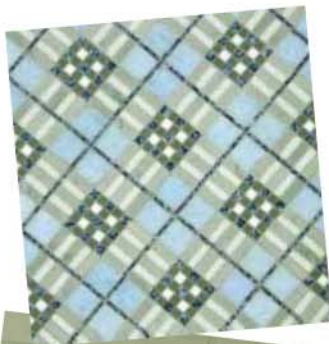
5. Xilo, another tile from Viva Ceramica, is a through-body porcelain that offers strong resistance to acids, scratches, frost, and dirt. Xilo

is offered in five colors (black shown) and a pattern that imitates the strains of exotic wood. **CIRCLE 214**
6. The Progetto L14 collection, from Ceramiche Lea, is a modular tile system in four basic sizes. The Spy 3D tile is shown here in Paprika, one of nine matte and seven glossy colors. d.sherman@ceramichelea.it (U.S. manager). Ceramiche Lea, Chicago. www.ceramichelea.it **CIRCLE 216**

Products Tile, Stone & Concrete

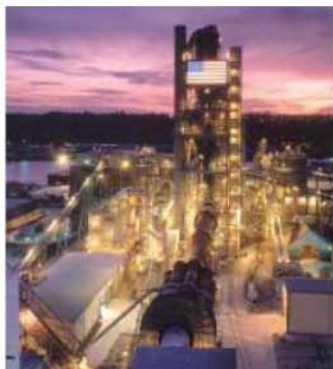
▼ Mosaic and stone collections

The Anticosti collection features a range of mosaic designs (Tartan Diamond, right) hand-made of pieces of glass, granite, and marble in honed, tumbled, or polished finishes. Luxor Grey Limestone (below right) for floors and walls features an unusual $1\frac{1}{2}$ " x 17" rectangular format. The Klimt-inspired Fritzta pattern (below) features colorful mosaics run between strips of tetra slate and black granite. Ann Sacks, Portland, Ore. www.annsacks.com **CIRCLE 217**



◀ Modern micromosaics

Walker Zanger's new collection of micromosaics, Antium, features decorative borders and dots made from tesserae—limestone and marble chips harvested along the southern shore of the Mediterranean in Tunisia. Artisans using a process unchanged from Roman times cut and fit each mosaic, fashioning both classic and modern motifs on a marble backing. The designs are suitable for most light commercial and residential applications, including backsplashes, wainscoting, showers, and floors. Walker & Zanger, Sylmar, Calif. www.walkerzanger.com **CIRCLE 220**



► Greener cement

The Portland Cement Association has outlined a proposal to allow for the inclusion of up to 5 percent ground limestone in the portland cement standard designated as ASTM C 150. The proposed change would bring U.S. standards up to those in Europe and Canada. The benefits include a reduction in the use of raw materials, and reduced energy consumption and greenhouse gas emissions. Portland Cement Association, Skokie, Ill. www.cement.org **CIRCLE 221**

► Reinforced cast concrete

Meld Extremeconcrete is an integrally colored, three-dimensionally reinforced concrete material that can be cast into an array of finished surfaces, furnishings, and accessories for interior and exterior applications. The standard thickness for countertops is $1\frac{1}{2}$ ", and concrete slabs come in 7' long or 17' square foot maximums. Specifiers can choose from three finishes and 50 standard colors. Robin Reigi Art & Objects, New York City. www.robin-reigi.com **CIRCLE 218**



▼ Customizable concrete

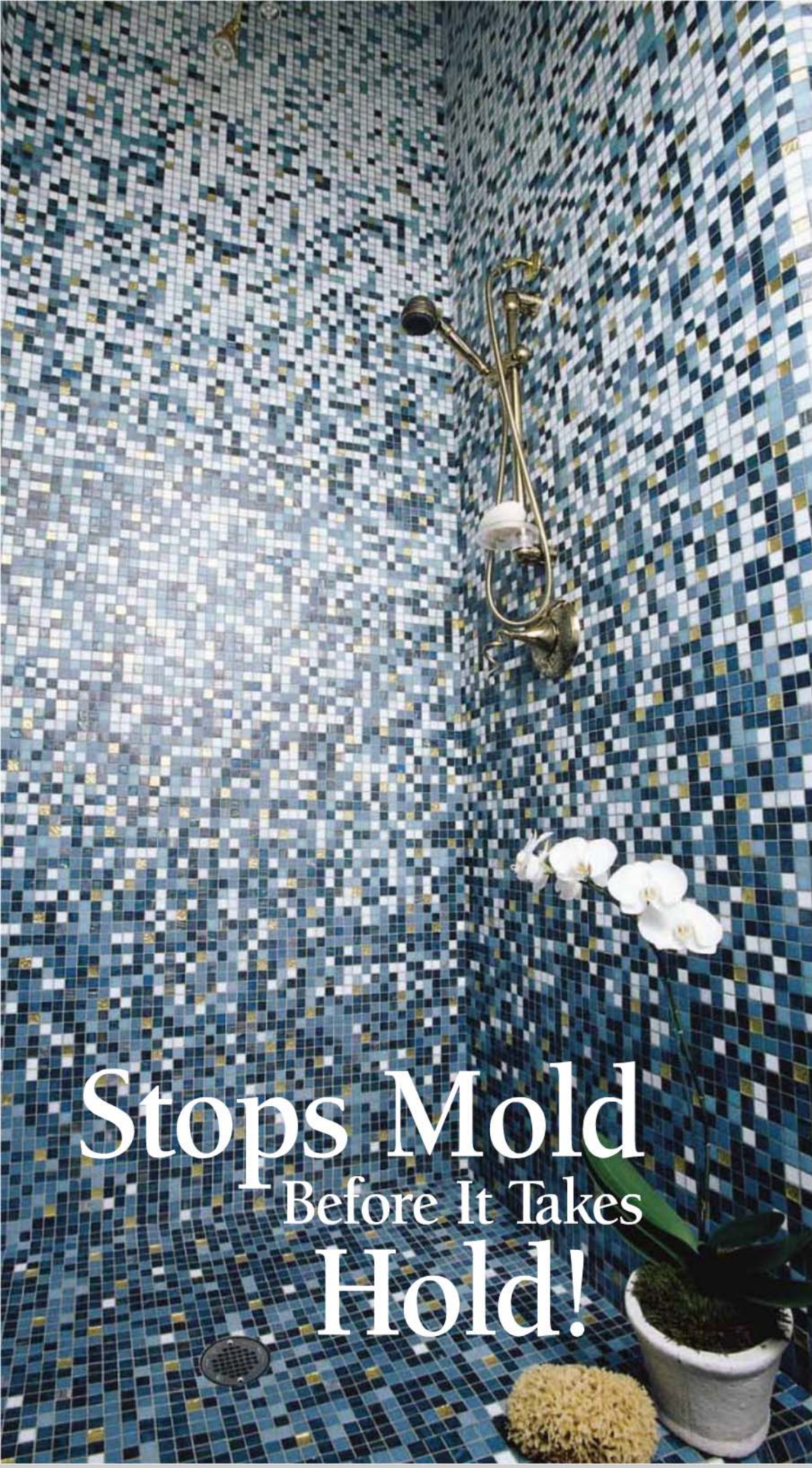
Sonoma Cast Stone makes concrete countertops, sinks, fireplace surrounds, tiles, and pavers that are customizable based on color, edging, finish, and dimension specifications. A staff architect works with specifiers to achieve stove surrounds, hearths, mantels, or pillars that are solid, fireproof, and made to individual design specs. A modern surround by EJ Interior Design of Mill Valley, California, is shown below. Sonoma Cast Stone, Sonoma, Calif. www.sonomastone.com **CIRCLE 219**



► Ancient feel, ceramic tile

The Tuphos collection of glazed ceramic tiles from American Marazzi recalls the feeling of natural stone that has been buffed and polished by the Mediterranean climate. Field tiles and modulares are available in 13" x 13", 6 $\frac{1}{2}$ " x 6 $\frac{1}{2}$ ", and 6 $\frac{1}{2}$ " x 13" sizes, three earthy colors, and distressed textures that offer built-in slip-resistance for traffic areas in homes or businesses. Inspired by ancient hand carvings, the collection's four fossil motifs are highlighted by sun images. American Marazzi Tile, Sunnyvale, Texas. www.marazzitile.com **CIRCLE 222**





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Product Briefs

► The latest bold venture in upholstery

All three upholstery fabrics in Unika Vaev's new Venture Collection are made from 100 percent recycled polyester, produced from postindustrial recycled chips. Insight is an "effervescent" design of varied-size circles; Gizmo, woven from a bouclé yarn, features a "technological" pattern; and Mindscape has a texture that works as an alternative to a solid or a pattern. The patterns are designed by Unika Vaev's V.P. of Design, Dorothy Cosonas. ICF Group, www.unikavaev.com

CIRCLE 223



◀ Veneer-faced trim

The S.J. Morse Company has introduced a new veneer-faced trim to provide an environmentally friendly alternative to solid wood. The company now offers the custom-made trim in six FSC-certified species—three domestics, oak, cherry, and maple; and three relatively unknown Brazilian species, Amapa, Taurari Vermelho, and Cupiuba. Cupiuba veneer trim is shown here in the lattice ceiling divider and on the kitchen walls. S.J. Morse, Capon Bridge, W.V. www.sjmorse.com CIRCLE 225



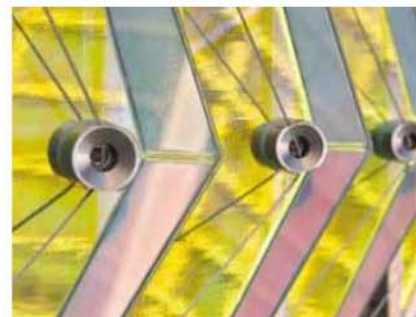
► Real World need for contract carpet

Durkan Commercial Carpet has a starring role in the current series of MTV's *Real World* reality TV show, set in San Diego. The show's producers converted a restaurant on the bay into living quarters and furnished it with approximately 1,300 yards of Durkan product in highly graphic and textural patterns for use in three bedrooms, a computer room, a gym/workout area, and the entry hallway. The Mohawk Group, Kennesaw, Ga. www.mohawkgroup.com CIRCLE 227



► Cultural bridge

At Fourth and Main Streets in Louisville, Kentucky, there is a new pedway connecting the Galt House Hotel and the Kentucky International Convention Center. Serving as a public sculpture that is the gateway to the cultural district, the pedway is crowned by a glass sculpture composed of triangular sheets of dichroic glass that are supported by steel tubes and stainless-steel cables. Designed by glass artist Kenneth F. vonRoenn, Jr., the entire pedway was produced in six months. Architectural Glass Art, Louisville. www.againc.com CIRCLE 224



▲ Sophisticated surfaces

Wolf-Gordon has introduced 12 new designs of 54", Type II contract wall covering. This third volume of the company's Summit Collection contains a selection of Minimalist, tailored patterns that represent three significant design trends: "Soft Geometrics" that blend with different architectural styles; "Material World" patterns that simulate the visual textures of interior surface finishes; and "Textile-ish" designs that offer the look of fine wovens in a durable wall surface. Wolf-Gordon, Long Island City. www.wolf-gordon.com CIRCLE 226

◀ Newsworthy chair

Poesis is a husband and wife architecture firm/furniture design studio whose pieces can be found at the Philadelphia Museum of Art and in private collections. The firm's new Pulp chair is made of recycled newspaper blended with water and wax in a formaldehyde-free, closed-loop system. The sides are sanded to a velvety texture and trimmed with maple or walnut. Poesis Design, Norfolk, Conn. www.poesisdesign.com CIRCLE 228



Product Briefs

► 1.4-gallon flush option

Kohler's Cimarron Comfort Height toilet features Class Five technology to ensure a powerful flush. The commercial-grade toilet, designed for both residential and commercial use, offers chair-height seating, strong gravity-fed flushing power with a 3½" flush valve, and the option of a 1.6- or 1.4-gallon flush. Over one year a family of four can save more than 2,000 gallons of water by using the 1.4-gallon setting instead of the 1.6 industry standard. Kohler, Kohler, Wis. www.kohler.com **CIRCLE 229**



◀ User-friendly metal laminates

In cooperation with G.E.'s Plastic Division, Alsa has developed SheetingFX, a line of real metal laminates that can be applied as easily as contact paper, without any special tools or skills. A new process allows the laminate to be cut with scissors yet remain resistant to stains and scratches. Alsa, Vernon, Calif. www.alsacorp.com **CIRCLE 230**



▲ Mi casa es su casa

The new furniture collection from Marmol Radziner and Associates, comprising outdoor, dining, bedroom, and living-room groups, is a natural extension of the firm's in-house design and construction capabilities, spanning architectural design, furniture design and fabrication, woodworking, and custom metalwork. Inspired by the new Venice, California, home of the firm's design principal Ron Radziner, the collection reflects a palette of materials composed of stainless and blackened steel, teak, walnut, and fabrics. The collection is available exclusively at the Los Angeles midcentury-design showroom Twentieth. Twentieth, Los Angeles. www.twentieth.com **CIRCLE 231**



For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Resources, then Reader Service.

PHOTOGRAPHY: © BENNY CHAN FOR MARMOL RADZINER

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Product Briefs



▲ Primed for protection

Tnemec has introduced Series 394 PrimePrime, a single component, moisture-cured, micaceous iron oxide (MIO), zinc-filled perimeter steel primer. Series 394 offers triple corrosion protection for perimeter steel, can be used under fireproofing, and bonds well to SSPC-SP3-prepared steel. Tnemec, Kansas City, Mo. www.tnemec.com **CIRCLE 232**

▼ Nonskid sandpaper finish

Nathan Allan's cast-glass floor panels can be tempered to increase the strength of the glass tenfold and are available in three combinations of multicolored Faux Finishes. Produced in $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", and $\frac{3}{4}$ " thicknesses, the panels feature Nathan Allan's "Glass Sandpaper" safety finish on the top surface to help create a nonskid environment. Nathan Allan Glass Studios, Richmond, B.C. www.nathanallan.com

CIRCLE 233



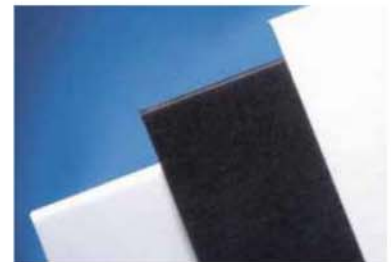
◀ Beacon of faith

With enough seats for 7,000 churchgoers, the Prestonwood Baptist Church of Plano, Texas, is one of the largest in the country. The church officer's wanted a beacon to reach out to the community, and Skywall was selected to manufacture its ATS translucent skylight canopies, SW-250 translucent curved wall panels, and a translucent glazed door for the tower. Vistawall, Terrell, Texas.

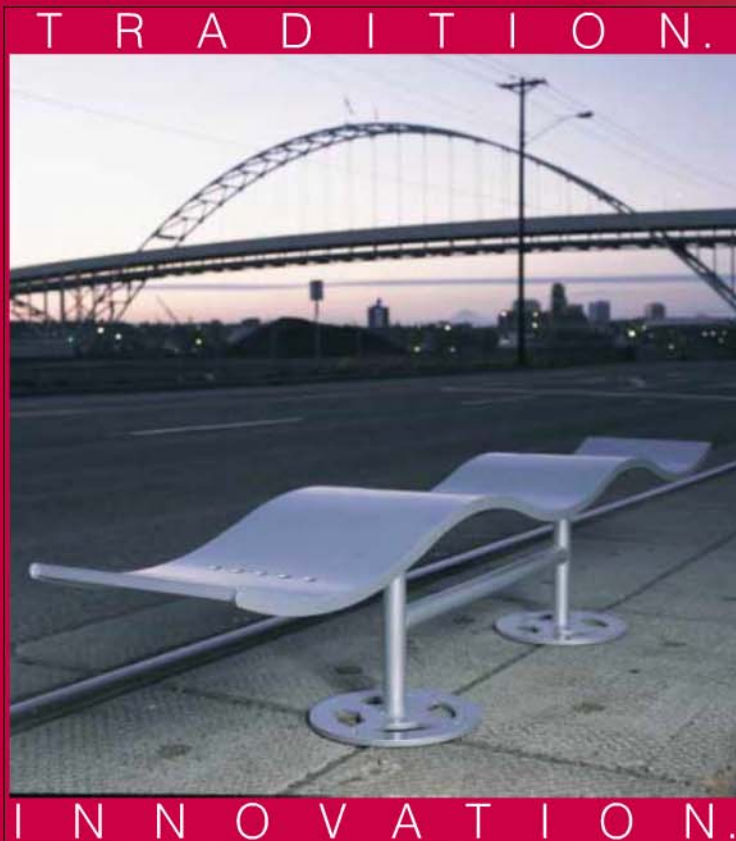
www.vistawall.com **CIRCLE 234**

► New colors and panel size for acoustic ceiling panels

Following last year's successful Techstyle ceiling panel launch, Hunter Douglas has added new products to the line, including two textile colors in off-white and black and a 2' x 6' panel format. The new panels feature the same acoustic properties and monolithic appearance of the original line, as well as the clip/hinge system that allows the panels to swing down for easy access to the plenum. Hunter Douglas Specialty Products Division, Broomfield, Colo. www.hunterdouglasceilings.com **CIRCLE 235**



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Product Literature

Ballast brochure

Universal Lighting Technologies new ULTim8 product literature provides specification information, catalog numbers, wiring diagrams, and appropriate lamp applications. Universal Lighting Technologies, Nashville, Tenn.
www.universalballast.com **CIRCLE 236**

Landscape lighting solutions

Lumière, a brand of Cooper Lighting, has published a 130-page color catalog entitled *Landscape Lighting Solutions*. It features low-voltage, line-voltage, and H.I.D. landscape lighting fixtures for a variety of commercial and residential applications. Cooper Lighting, Peachtree City, Ga. www.cooperlighting.com

CIRCLE 237

Electronic resource library

BurkeMercer Flooring Products now offers their entire Architectural Binder on one CD-ROM. This electronic resource library includes product descriptions, color charts, specifications, product bulletins, installation and maintenance guidelines, and warranty information. BurkeMercer Flooring Products, Umatilla, Fla. www.burkemercer.com **CIRCLE 238**

NEW SITES FOR CYBERSURFING

Interactive site educates users about Tsao's line of decorative lighting fixtures www.tsaolighting.com



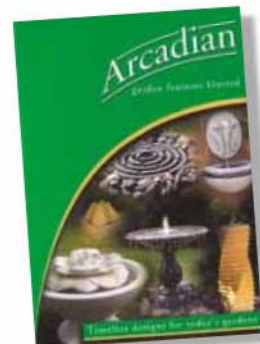
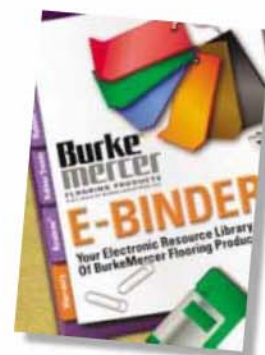
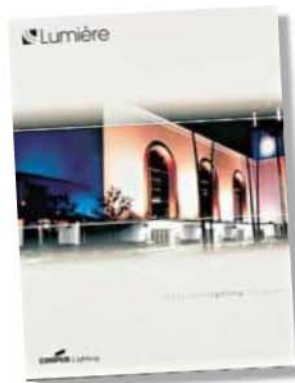
Download Seamless Textures from Eldorado Stone to apply the stone profiles to 2D elevation, 3D perspective, or animation www.eldoradostone.com

The Coverings trade show, a showcase for ceramic tile and natural stone floor coverings, has reorganized its site for easier navigation, including seven trade areas www.coverings.com

Ornamental stone accents

Haddonstone has released its newest catalog for Arcadian Garden Features. The range includes more fountains and garden accents available in a choice of three colors. The water features include pumps, plumbing, and installation instructions. The fountains and garden accents are handcrafted in durable frost-proof cast limestone. Haddonstone, Bellmawr, N.J. www.haddonstone.co.uk

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Product Literature

Worktables brochure

Ahrend International's new brochure details the Ahrend 22 collection of modular, height-adjustable worktables by industrial designer Bas Puijser. Photographs depict the range of tabletop shapes and leg heights available. Ahrend USA, New York City. www.ahrend.com

CIRCLE 240

Cool roof catalog

A new 40-page, full-color catalog from Petersen Aluminum describes the company's complete line of architectural metal for roofing, mansards, and fascia. The catalog features a color chart illustrating the new line of PAC-CLAD Cool Colors that would meet Energy Star, LEED, and/or cool roof certification requirements for solar reflectance and emissivity ratings. Petersen Aluminum, Elk Grove Village, Ill. www.pac-clad.com

CIRCLE 241

Retail lighting

Arde Lighting now offers a brochure detailing the new Retail Rod, the company's self-illuminated linear rod lighting system for retail clothing displays. Detailed specifications and schematic

drawings for surface-suspended and wall-mounted Retail Rod models are provided, along with ordering information for each. Information on available remote ballast modules is provided with photometric data. Ardee Lighting, Shelby, N.C. www.ardeelighting.com CIRCLE 242

Translucent daylighting ideas

Major Industries' updated translucent daylighting idea book features skylights, wall panels, curved systems, as well as other applications. The designs are illustrated with color photographs that depict both the inside and outside views, in a broad range of applications. Major Industries, Wausau, Wis. www.majorskylights.com CIRCLE 243

Access door binders

The Bilco Company, manufacturers of specialty access products, offers its new and expanded product line specification binders. The binders include detailed product specifications and drawings, product selection guidance, as well as complete information on product options and accessories. The Bilco Company, West Haven, Conn. www.bilco.com

CIRCLE 244



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Landmarks in Brick

Since 1885, The Belden Brick Company has been making brick in hundreds of colors, sizes and textures. Throughout these years, Belden has established and sustained a widely recognized reputation for the quality of its products.

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Colors

Belden Brick is available in a world of colors including soft whites and creams, golden buffs and dusty tans, delicate pinks and cinnamon reds, chocolate browns, pewter grays and coal blacks. With so many colors to choose from your options are truly endless. Here is a small sample of over 200 color ranges.

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www.primalighting.com	153

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www.g2art.com	151

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16 Electrical	Globes available in glass, polyethylene, acrylic, and polycarbonate. Diameters from 6-in. to 36-in. Chain, cord, and stem suspensions are available in custom stem lengths to meet your specifications. Primelite also carries decorative outdoor fixtures. Sign and task lighting. Custom types of heads and arm bends are available in all aluminum parts. Indoor wall sconces and a wide selection of children's fixtures. Hanging prismatic fixtures available in 12-in., 19-in., 22-in., 26-in. diameters with or without cages. All fixtures can be made for incandescent, metal halide, high-pressure sodium, and PL bulbs. Metal parts are powdercoated; wide selection of colors to choose from. Fixtures can be designed to meet your specifications. Fax number 516-868-4609.
www.Primelite-MFG.com	154

Luraline Products Company	
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16 Electrical	The Helos family of lighting fixtures from Luraline Products Company features a classic industrial design in a coordinated collection of pendant, ceiling, wall, and post mount configurations. Helos is offered with choice of incandescent or energy-efficient compact fluorescent or HID lighting. A full palette of painted and metallic finishes is available, as well as custom colors on request. All fixtures in the series are suitable for interior or exterior applications. For more information, please call or visit the Web site.
www.luraline.com	152

TEKA Illumination	
Dark Sky Options	805-434-3511
	
16 Electrical	At TEKA Illumination, they have light under control. TEKA offers Dark Sky solutions with the warmth and durability of copper, bronze, and brass. Visit TEKA's Web site for its full line of roadway to residential luminaires built to your specifications.
www.teka-illumination.com	155

Greenguard Environmental Institute	
Low-Emitting Interior Products Guide	800-427-9681
	1 General data The GREENGUARD Certification Program provides the only guide to low-emitting building materials and furnishings. The GREENGUARD Product Guide helps specifying professionals choose products that meet their organization's indoor air quality requirements. GREENGUARD Certified Products have undergone extensive testing to stringent emission requirements. The U.S. Green Building Council established GREENGUARD Certification or testing as a LEED state reference for low emitting furnishings. Access the free GREENGUARD Product Guide on the Web site.
	www.greenguard.org  156

L.M. Scofield Company	
Concrete Coloring Admixture	800-800-9900
	3 Concrete CHROMIX® admixtures for Color-Conditioned™ Concrete: Award-winning projects begin with award-winning materials. CHROMIX Admixtures for Color-Conditioned Concrete are colored, water-reducing, set-controlling admixtures for ready mixed architectural concrete. Coloring concrete integrally, they produce rich hardscapes and precast, tilt-up, or cast-in-place buildings of enduring beauty. CHROMIX Admixtures provide permanent, streak-free color conditioning and increased concrete strength at all ages. Call or email to request color cards and specifications. Email info@scofield.com.
	www.scofield.com  159

Master Halco	
Decorative Wire Fencing	
	2 Site construction Master Halco's new Series 300™ Decorative Wire fencing incorporates some of the best design elements of its industry-leading ornamental iron and color chain-link. Its steel and wire mesh construction in a special twin wire design creates unique joint strength and durability. Series 300 is available in four colors: tan, bronze, white, and black. Decorative wire fencing complements a variety of architectural styles and is backed by a 12-year limited warranty. With more than 60 locations across North America, Master Halco has the products and services to satisfy your project requirements. Visit Master Halco's Web site to view its extensive product offering and download specifications and drawings. (Black decorative wire fencing as seen in the 2003 Sunset Idea House.)
	www.FenceOnline.com  157

Circle Redmont, Inc.	
Glass Panel Systems	800-358-3888
	4 Masonry Circle Redmont specializes in bringing natural light into spaces in extraordinary ways.™ Circle Redmont® custom manufactures fully engineered glass panel systems with proprietary setting materials and fabrication methods that have been developed and time proven over the last 40 years. As an expert in custom structural, specialty glazing, Circle Redmont's in house teams of designers, engineers, and craftsmen are ready to assist you from concept thru installation. With a resume of 40 years of satisfied customers and applications in the field, they know how to cost effectively achieve the look you want. Call them or visit their Web site.
	www.circleredmont.com  160

CETCO	
Below-Grade Waterproofing	
 VOLCLAY ULTRASEAL SP UNDER SLAB & LAGGING APPLICATION	3 Concrete Volclay BPA is a technological advancement in below-grade waterproofing. This new technology combines natural sodium bentonite with a unique hydrophilic polymer to form a waterproofing membrane that is at least five times less permeable than traditional waterproofing systems. The BPA technology has exceptional chemical resistance, enhanced swelling properties, and weighs 60% less than traditional bentonite products, making it easier to handle and install. For more information, visit the Web site.
	www.cetco.com  158

The Belden Brick Co.	
Clay Brick Pavers	330-456-0031
 CLAY GENUINE PAVERS	4 Masonry Recognized as a national leader in the manufacturing of brick for over 100 years, Belden Brick offers an unmatched selection of genuine clay brick pavers with proven performance records under the most challenging climates conditions. When you choose Belden genuine clay brick pavers, architects don't have to sacrifice aesthetics for durability. Endless options including a choice from dozens of colors make it easier to design with style and elegance. For a perfect union of form and function, accent your next project with Belden genuine clay brick pavers.
	www.beldenbrick.com  161

Gage Corporation, Intl.	
Cast Metal Wall Surfacing	800-786-4243
	5 Metals Gagecast® is a cast metal wall surfacing material suitable for a variety of interior architectural applications where patterns that feature high luster, relief, durability, and cost effective installation are a requirement. Twenty-four designs are standard, however, custom collaboration is encouraged. Gagecast is one component of Gage Vertical Surfacing. Contact the factory for product literature and selected samples.
www.gageverticalsurfacing.com	 162

Tangent Stair Manufacturing Inc.	
Pre-Assembled Straight Stairs	807-577-8471
	5 Metals Tangent Stair Manufacturing Inc. offers pre-assembled straight stair systems for residential and commercial applications. Featured here is a utility stair built with structural select spruce stringers and plywood tread and riser ready to accept floor covering. Screws, glue, wedges, and dovetail grooves make for solid construction and a virtually squeak-free system. A standard 14-rise unit weighs about 225-lb. and can be easily placed in five minutes by two men.
www.tangentstair.on.ca	 165

Handrail Design, Inc.	
Pre-Engineered Railings	717-285-4088
	5 Metals HEWI nylon railing system: Add color and strength to your project with a nylon guardrail system. Nylon-coated railings come in a range of attractive colors and wood finishes. They provide exceptional structural strength, chemical resistance, hygienic qualities, and are virtually maintenance free. Infill panels are available in tempered glass and perforated metal. Handrails in colored nylon and solid wood. Standard and custom designs are available. Email info@hdirailings.com.
www.hdirailings.com	 163

Chadsworth's 1.800.Columns®	
Columns, Pillars & Pilasters	800-486-2118
	6 Wood & plastics Chadsworth's 1.800.Columns is known as the best and most authentically correct architectural column in the industry today. Offering a complete line of columns, pillars, pilasters, and posts for both interior and exterior use, with plain or fluted shafts in a variety of sizes and styles. Columns are available in wood, PolyStone™, fiberglass, and PVC. New product lines include the Bungalow, the PolyStone™ Premier Custom Collection, the PolyStone™ Balustrade Series, and Classic Pergolas. Chadsworth's award-winning Idea Book (\$20) features an exciting collection of column projects. Free catalog. Chadsworth's 1.800.Columns add drama and definition as well as strength and durability to any design project.
www.chadsworthcolumns.com	 166

Lapeyre Stair Inc.	
Convenient Conventional Stairs	
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www.lapeyrestair.com	 164

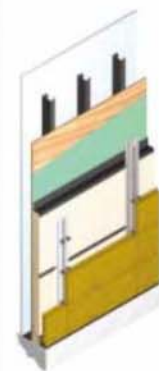
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www.meltonclassics.com	 167

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CertainTeed Corporation, Roofing Products Group

Shingles

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EcoStar

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8 Doors & windows



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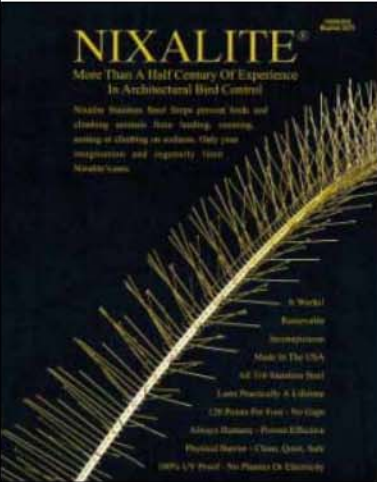


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Hyde Park Fine Art of Mouldings, Inc.		
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		www.scofield.com  175

Nixalite of America, Inc.		
Architectural Bird Control		
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Concealite Life Safety Products		
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Pocket Chair/Barstool	323-655-2116	
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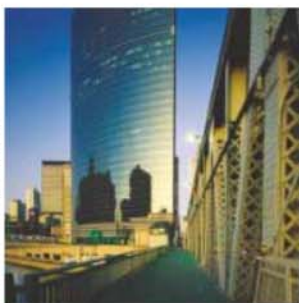
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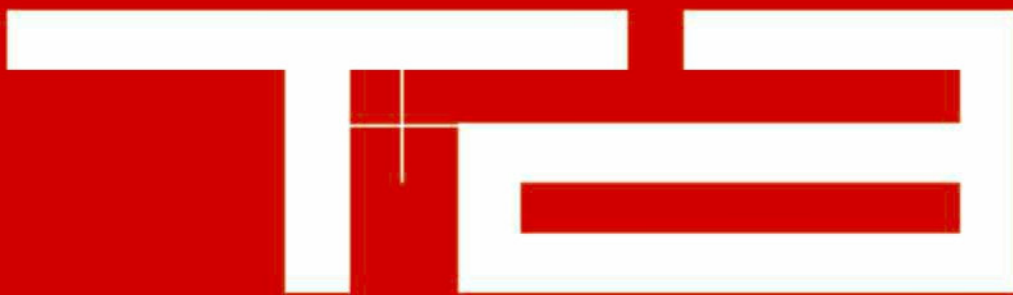
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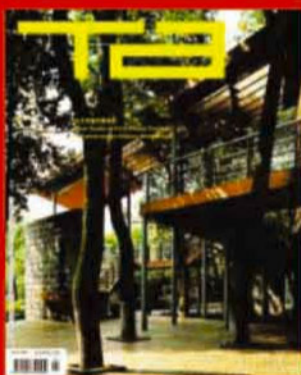
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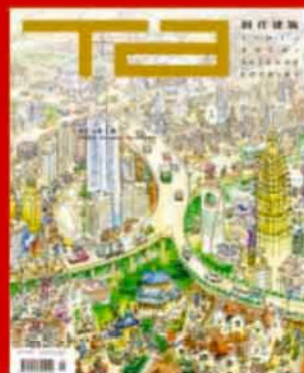
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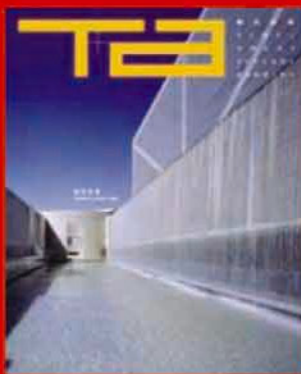
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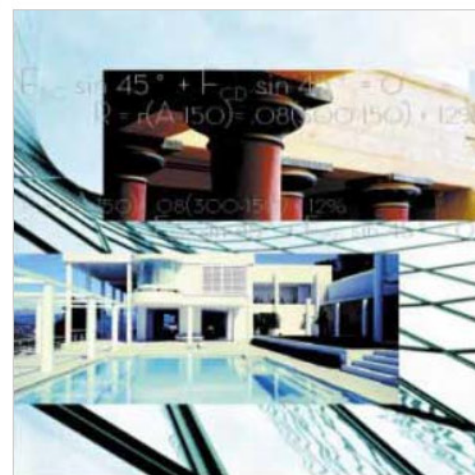
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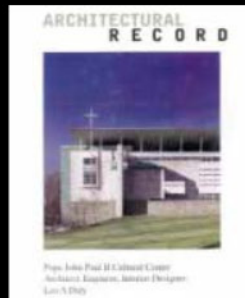
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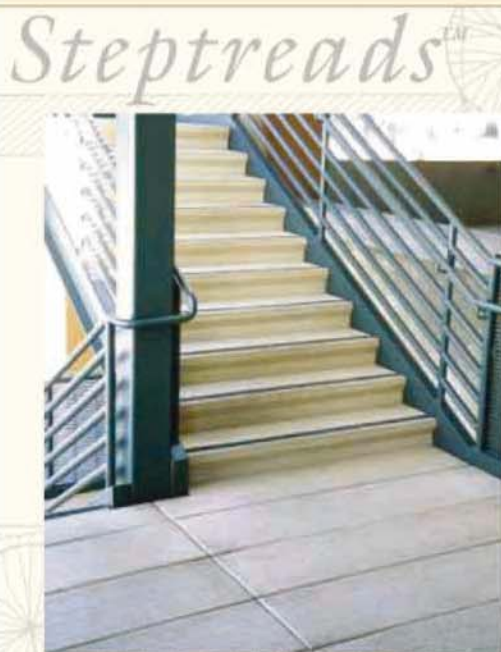
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Yan Huang: Beijing's Olympic planner

Interviewed by Clifford A. Pearson

As the director of the Planning & Construction Department for Beijing's winning bid for the 2008 Olympics, Yan Huang helped bring home a prize that China had long coveted. Now, as the deputy director of the Beijing Municipal Planning Commission and deputy director of the Olympic Venue Development Coordination Commission, she has to make sure that the political victory turns into a physical reality and contributes to Beijing's long-term development as a modern capital with a remarkable historic core. Trained as an architect in China, Belgium, and the U.S., Huang is currently spending a school year at Harvard University as a Loeb Fellow.

Q: *What is your biggest challenge in terms of the Olympics?* As a planner, I need to make sure that not only are the Olympic facilities built on time and with the best quality design, but that they work as part of our long-term strategy for the development of Beijing. Like cities in the United States, Beijing needs to balance private and public development pressures, control sprawl, and upgrade our infrastructure. With the Olympics, our goal is to integrate the sports venues with other projects such as housing, hotels, retail, offices, convention facilities, and museums. We want to make really good urban areas, not just for the duration of the games but for the long term.

Were there any particular models you used for your Olympic plans? For us, one of the most successful Olympic models was Barcelona. They brought in new thinking, the best foreign architects, and made Barcelona a more global city as a result. The long-term impact on the city has been very positive. Sydney, on the other hand, did a great job creating a place for the games, but is having trouble making it work afterward because the site [Homebush Bay] is so far from the rest of the city. *What are some of the key challenges for Beijing as a whole?* We need to create regionwide solutions to urban growth. Just as with American cities, we have many different jurisdictions within the greater municipal area, and each one has its own perspective and needs. Car ownership in Beijing has been growing 25 percent annually in recent years and traffic problems are getting very bad. During the past three to five years, we have made a huge investment in highway construction, but now we need to increase our public transportation system. We have four or five subway lines under construction right now and are building light-rail lines out to the suburban areas.

What has it been like spending a year at Harvard? It has been great. At home, I always feel like a fireman, dealing with whatever is most urgent at that moment. But here I've been able to think about the big picture and what's

really happening in Beijing—what has been successful, what hasn't, what can we improve. There are a lot of differences between the U.S. and China in terms of economics and politics. But the urban challenges in both countries are actually quite similar.

What are some of the key things you've learned this past year? I've learned to look at the whole picture. It can be very dangerous for Chinese cities to copy directly from urban development in America. There are some things we can learn from, but some that we should avoid.

Photograph by Andy Ryan at Harvard Stadium in Cambridge, Mass.